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## SURGICAL TREATMENT OF CHOLELITHIASIS

## I. PRIMARY RESULTS

By IB ANDERSEN, P. THESTRUP ANDERSEN, THUE POULSEN and BENT RASMUSSEN

The present and a subsequent paper will report a study on patients with cholelithiasis treated surgically in Departments A and R of the Copenhagen County Hospital during the 20 years' period January 1937 to July 1957.

The material, the primary results of surgical treatment and related problems will be submitted in the present paper, while the subsequent paper deals with the late results as found at follow-up.

## MATERIAL

Number of patients. Diagnoses. Operative rate.

During the period under consideration a total of 1,673 patients had operations for biliary tract disease, cholelithiasis in the great majority of cases, but also pure cholecystitis without calculi

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Table 1.

Diagnostic Groups Among 1,673 Patients Operated upon for Gallstone Diseases During the Period Jan. 1, 1937 to July 1, 1957.

Cholecystolithiasis .....	728
Cholecystolithiasis + cholecystitis.....	604
Cholecystitis .....	53
Cholelithiasis + cholecystitis .....	657
Cholelithiasis and/or cholecystitis .....	288
Total material.....	1,673

(Table 1). The latter group makes up but a small proportion of the series, but is included in the material under consideration.

From Fig. 1 it will be seen that the annual number of operations for gallstones increased about 10-fold during the period concerned. In 1937 operations on the biliary tract made up 1.3 per cent of all operations performed in the two departments and in 1957 4.5 per cent.

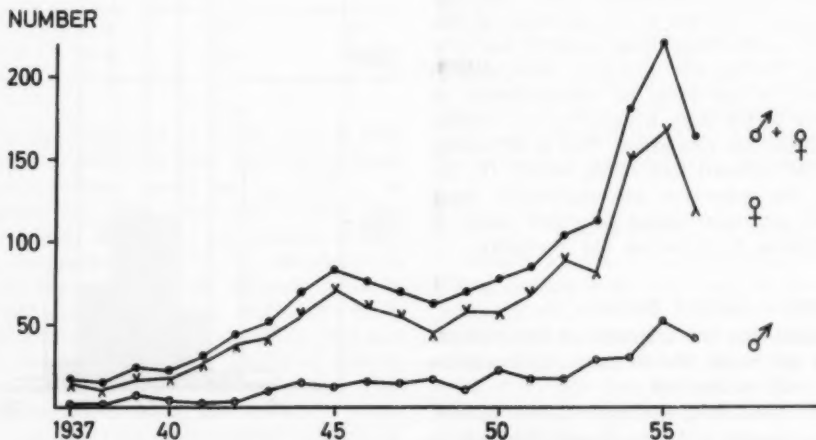


Fig. 1.

Distribution of Patients Operated upon for Gallstones During the Period 1937—1956 Inclusive.

## PER CENT OPERATED

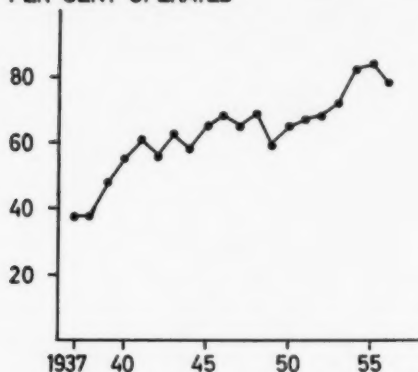


Fig. 2.

Operative Rate for all Cases Diagnosed as Cholelithiasis During the Period Jan. 1, 1937 to July 1, 1957.

It is evident also that the ratio males: females remained fairly constant throughout the period, viz. 1:3.8.

Fig. 2 shows that the operative rate, i. e., the percentage of admitted patients with biliary disease who were treated by surgery, increased from 40 per cent to 80 per cent. From 1937 to 1941 this increase was rather steep, but thereafter more even.

This pronounced increase in the number of biliary tract operations is due not only to the increase in the population and the expansion of the departments, but also to an increased surgical activity in this category of disease. Whether a real increase in the incidence of the disease has taken place is impossible to tell from these values.

Surgical activity has increased because certain contra-indications, such as age, heart disease, obesity, etc., have gradually been eliminated, and especially because the operative indications have been extended to uncomplicated cases. The previous demand of at least three previous, severe attacks before embarking upon surgery has now been waived. To-day, one attack — also without complications in the form of inflammation or signs of stone in the deep biliary tract — makes up an indication for operation. This is of course a result of the reduced risk (*vide infra*). On the other hand, the numerous uncomplicated, early cases which are now being operated upon of course contribute to reducing the mortality.

## Age Distribution and Sex Ratio.

Fig. 3 shows that the majority of the patients were in the age range 40—60 years. This applies to males as well as females.

As already mentioned, the ratio males: females in the entire series is 1:3.8, almost constant in all age groups except 10—30 years in which it is very different, viz. 1:16. In the age group 30—40 years the ratio is 1:6. Thus, the patients who come

Table 2.

Ratio Males: Females Operated upon for Gallstone Diseases in the Different Age Groups.

	Age groups					
	10—30	30—40	40—50	50—60	60—70	> 70
M/F	1/16	1/6	1/3	1/3	1/3.5	1/3.5

to operation at an early age are predominantly women (Table 2).

The mean age for the entire series is 46.4 years among the females and 50.7 years among the males.

## Nature of the Disease.

Fig. 4 gives the per cent distribution of the three diagnostic groups: pure cholecystolithiasis, cholecystitis with and without calculi, and cholecholelithiasis without simultaneous cholecystolithiasis and/or cholecystitis.

Out of the entire series the three diagnostic groups make up 44 per cent, 39 per cent and 17 per cent respectively. A study of the per cent distribution of cholecystitis (with and without

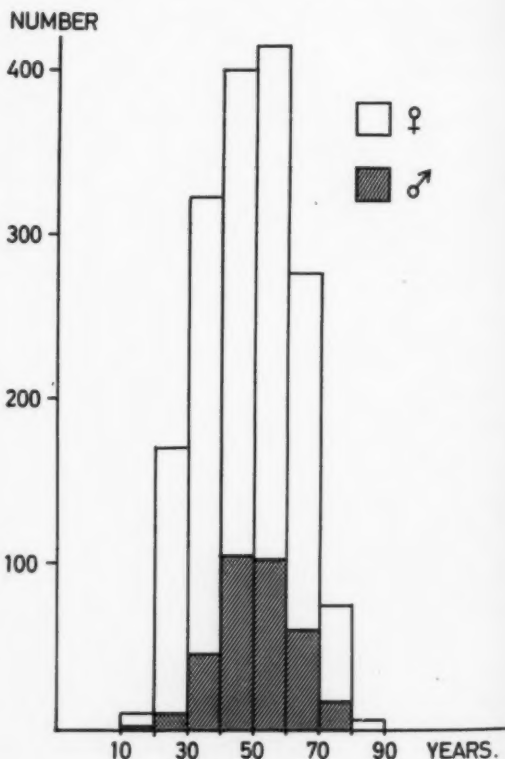


Fig. 3.

Age Distribution and Sex Ratio Among 1,673 Patients Operated upon for Gallstone Disease During the Period Jan. 1, 1937 to July 1, 1957.

PER CENT

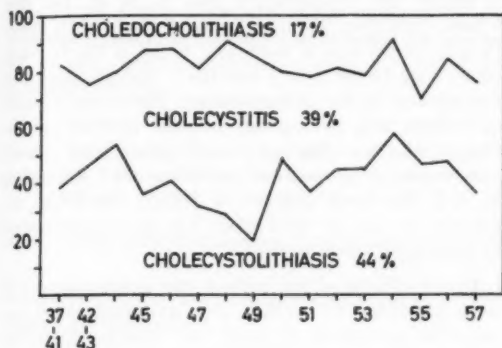


Fig. 4.

Distribution by Diagnosis of 1,673 Patients Operated upon for Gallstone Diseases During the Period Jan. 1, 1937 to July 1, 1957.

calculi) and uncomplicated cholecystolithiasis during the period before and after 1950 reveals a change: There has been an approximately 10 per cent decrease in the number of cases with cholecystitis and approximately the same increase in those with cholecystolithiasis.

Cholelithiasis occurred in 16.5 per cent and 19.9 per cent respectively, *i. e.* a distinct increase during the after-1950 period.

If cholecystitis were to be taken as a complication to cholelithiasis, its incidence would be

Table 3.

Per cent Distribution by Diagnosis of 1,673 Patients Operated upon for Gallstone Diseases During the Periods 1937-49 and 1950-57.

	Cholecystolithiasis per cent	Cholecystitis per cent	Cholelithiasis per cent
1937-49	36.9	46.6	16.5
1950-57	46.5	34.6	19.9

expected to be increased in cases with a long history and *vice versa*. In that case, the average length of the history would be expected to be shorter during the 1950-1957 period than that from 1937-1949. However, the average length of history during the two periods, calculated on the basis of the case records, proved to be as follows: 1937-1949: 4.1 years and 1950-1957: 4.2 years. Even during the periods 1937-1945 and 1954-1957 inclusive the mean length of history was very similar, *viz.* 3.8 and 4.0 years. This would seem to indicate that the so-called "complications" (in this case cholecystitis) are not in fact complications. However, it must be borne in mind that the data given regarding the history have presumably been rather uncertain.

Table 4 shows the ratio men: women in the different diagnostic groups.

Table 4.

Sex Ratio by Diagnosis Among 1,673 Patients Operated upon for Gallstone Diseases During the Period Jan. 1, 1937 to July 1, 1957.

	Cholecystolithiasis	Cholecystitis	Cholelithiasis
M:F	1/4.2	1/3.3	1/3.7

The difference between this finding in pure cholecystolithiasis and the two complicated groups shows that at the time of operation the disease is more often complicated in men than in women (*cf.* also below). When considering also the higher mortality among the men (*vide infra*), the findings might indicate that men have had the disease longer when they come to operation (*cf.* also the age distribution in Fig. 3). Analysis of the length of history among men and among women showed, however, that the average length of history is shorter in men (Table 5).

Table 5.

Average Length of History Among Men and Women Operated upon for Gallstone Diseases on the Basis of the Records for 1,024 Patients.

	Length of history
M (194)	3.0 years
F (830)	4.2 years

Thus, the fact that biliary tract diseases are more complicated at the time of operation in men than in women must be due to causes other than the duration of the disease. This finding might perhaps also be taken to support the view that the so-called complications (cholecystitis, cholelithiasis) are not dependent upon the length of the history. To study this aspect in more detail, many other factors would have to be investigated (*e. g.*, the type of the calculi and of infection, the anatomy of the cystic duct and common duct in each individual case, etc.). These factors cannot be sufficiently elucidated by the present series.

#### SYMPTOMS AND SIGNS

Details of the symptomatology will not be given. Suffice it to state that 96 per cent of the operated patients had a history of typical gallstone attacks, three per cent atypical attacks, and only one per cent merely dyspeptic symptoms. A total of 17 per cent had a history of typical attacks and dyspepsia and 56 per cent admitted during attacks. The series does not include any case of the so-called silent gallstones, meaning completely asymptomatic stones detected by chance.

Table 6.  
*Per cent Occurrence of Manifestations of Biliary Obstruction (Dark-coloured Urine, grey Stools, Jaundice) and Jaundice in 4 Diagnostic Groups Among 1,673 Patients Operated upon for Gallstone Diseases.*

	Biliary obstruction per cent			Jaundice per cent		
	M	F	M+F	M	F	M+F
Cholelithiasis . . . . .	38	46	45	22	28	27
Cholecystitis . . . . .	61	58	59	44	38	40
Choledocholithiasis + cholecystitis . . . .	87	87	87	84	72	75
Choledocholithiasis + cholecystolith. . .	82	79	80	71	68	69

Only a very small proportion of the cases were emergency operations, *i. e.*, patients admitted with perforation or threatened perforation. The fact is that the departments have not at any time treated acute cholecystitis by emergency operation.

Fig. 6 gives the frequency of biliary obstruction in the series, divided into four diagnostic groups. Surprisingly, signs of biliary obstruction (dark urine, grey stools, jaundice) occurred in 45 per cent of the cases of pure cholecystolithiasis and that in these cases jaundice had occurred in more than 25 per cent. It must be mentioned, however, that in this group the obstructive phenomena were usually of only a few days' duration and in most cases mild. It seems reasonable to assume that in a number of cases the biliary obstruction has been due to spasm of the sphincter Oddi. Pure (postoperative) dyskinesia is not infrequently accompanied by short-lasting biliary obstruction. In this group the obstructive symptoms are less common among males than females, whereas the reverse tendency is found in complicated cases.

In cholecystitis, the inflammatory oedema is no doubt an important cause of the biliary obstruction.

Most commonly, however, biliary obstruction occurs in the combination choledocholithiasis-cholecystitis, *viz.* in 87 per cent of these cases. Jaundice had been present in 75 per cent of this group. In common-duct stones unaccompanied by infection, obstructive phenomena are somewhat less common, being present in almost 30 per cent of the non-jaundiced cases.

For various reasons, the present series did not permit a study of the diastase values in the different groups.

#### INDICATIONS FOR OPERATION

As already mentioned, emergency operation for cholecystitis was not used at any time during the period under consideration. Cases with inflammation have been treated by conservative management until the acute inflammatory phenomena

had subsided, as estimated by an ordinary clinical study, the temperature and E. S. R. On the whole, however, it may be said that while previously there was a tendency to let a fairly long time — up to the 2 or 3 months — elapse after the subsidence of the inflammatory phenomena until operation, this period has become shorter in the course of time. During recent years only about one week of normal temperature and declining E. S. R. has been demanded before operation. Of course, the use of antibiotics has also contributed to shortening this period.

In the course of the period, the operations have been extended to include also uncomplicated cases with a history of only one attack. With the introduction of improved pre- and postoperative management, improved anaesthesia, antibiotics, etc., a number of previous contra-indications (old age, heart diseases, obesity, pulmonary disorders, etc.) have been eliminated.

#### TYPES OF OPERATION

Analysis of the operations, grouped into two periods shows that the number of uncomplicated cholecystectomies has increased during recent years (Table 7).

This is due both to the above-mentioned extension of the indications to uncomplicated cases and (cf. Table 7) the fact that the number of exploratory choledochotomies has greatly decreased. The latter operation has recently been replaced to a marked extent by operative cholangiography, and thus a large proportion of these cases have moved into the group of uncomplicated cholecystectomies. Thereby, the percentage of choledochotomies with positive findings of calculi has increased from 35 per cent to 70 per cent. At the same time, there has been an increase in the absolute number of cases where calculi have been found in the deep bile ducts (cf. Table 3).

The decrease in the number of cholecystostomies, used only as an emergency operation in elderly, acutely ill patients, is a sign that severe, acute cholecystitis is now more easily managed by conservative measures than previously.

Table 7.  
*Types of Operation used in 1,673 Cases of Gallstone Diseases During the Period Jan. 1, 1937 to July 1, 1957 Divided into two Periods.*

	1937-1947		1948-1957		Total No.
	No.	Per cent	No.	Per cent	
Cholecystectomy . . .	239	48.3	790	67.1	1,029
Cholecystectomy + expl. choledochotomy	161	32.5	168	14.3	329
Cholecystectomy + choledocholithotomy	80	16.2	208	17.7	288
Cholecystostomy . . .	13	2.6	6	0.6	19
Anastomosis operat.	2	0.4	6	0.6	8

Operations establishing anastomosis in cases with common-duct stones have only been performed in a few cases. In those cases where it was used, because it proved impossible to remove all stones, sphincterotomy would no doubt be preferred to-day.

Table 8.

*Use of Mucoclasia and Transduodenal Operation in 1,673 Patients Operated upon for Gallstone Diseases During the Period Jan. 1, 1937 to July 1, 1957.*

	1937-1947		1948-1957		Total
	No.	Per cent	No.	Per cent	No.
Partial cholecystectomy					
+ mucoclasia .....	11	2.2	16	1.4	27
Transduodenal operat..	2	0.4	20	1.7	22

Table 8 shows the decreasing use of mucoclasia, i. e., electrocoagulation of the gallbladder mucosa or — more often — parts of it in complicated, severely infected cases where it has been impossible to remove the gallbladder *in toto*. Transduodenal operations have increased in number, and there is little doubt that there will be and should be a further increase in their number.

#### COMPLICATIONS AND MORTALITY

While a distinct decrease in the number of postoperative complications has been found in cholecystolithiasis and cholecystitis, there is an increase in the complications following operations for choledocholithiasis. The cause is presumably

the more widespread use of common-duct drainage during recent years. While during the first 10-year period a T-drain was inserted only exceptionally following choledochotomy, this has become the standard method after cholangiography was introduced as a routine procedure. The insertion of such a drain increase the possibility of postoperative elevation of temperature, oozing of bile (after removal of the drain), and in a few cases it may give rise to cholangitis or abscess formation.

#### MORTALITY

Among the 1,673 operations 43 deaths occurred, i. e., a postoperative mortality of 2.6 per cent.

From Fig. 5 it will be seen that in the course of the period concerned, the annual number of operations increased about 10-fold and that during the same period the operative mortality decreased from about 10 per cent to about 1 per cent, calculated in 4—5 year periods. A calculation of the mortality per annum shows that during the first 10 years it ranged from 27 per cent to 0, while during the next 10 years it was constant between a good three and 0. During the most recent years the average mortality has been about one per cent.

This decrease is due to the same causes that apply to any major abdominal surgery: Improved preoperative and postoperative management, improved anaesthesia and consequently a better controlled, quieter, and more atraumatic operative technique. Of course, technical improve-

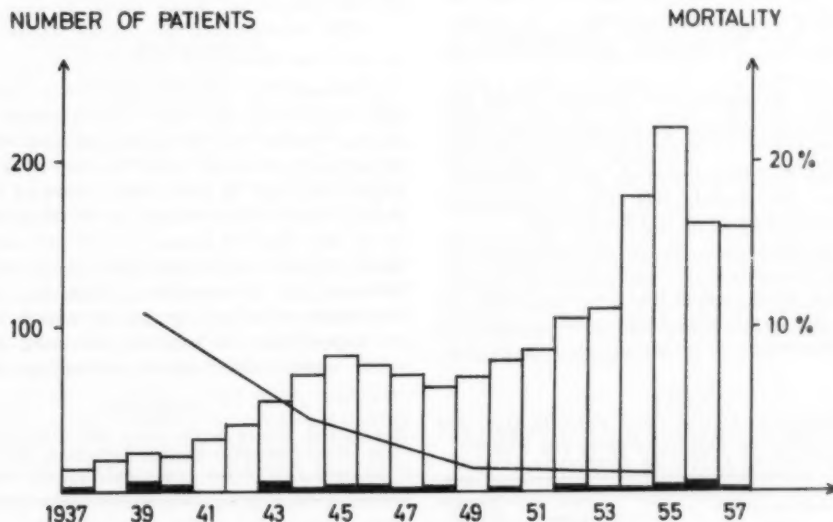


Fig. 5.

*Annual Number of Operations and Operative Mortality, Calculated in 5-year Periods, Among 1,673 Patients Operated upon for Cholelithiasis During the Period Jan. 1, 1937 to July 1, 1957.*



Table 9.

*Operative Mortality Among 1,673 Patients Operated upon for Gallstone Diseases During the Period Jan. 1, 1937 to July 1, 1957 by Age Group and Sex.*

Age	Deaths		Deaths M/F	Entire series		Entire series M/F	Mortality		Total mortality
	M	F		M	F		M	F	
30—49	5	5	16/27 (= 1/1.7)	149	573	352/1321 (= 1/3.8)	3.4 %	0.9 %	1.4 %
50—59	4	9		102	313		4.0 %	2.9 %	3.1 %
60—69	3	8		60	216		5.0 %	3.7 %	4.0 %
70—89	4	5		17	63		23.5 %	7.9 %	11.3 %
							4.5 %	2.0 %	2.6 %

ments, such as the atraumatic suturing technique in dealing with the deep biliary tract, have played a role too.

Table 9 shows that the ratio males: females among the fatalities is 1:1.7 in contrast to the ratio of 1:3.8 of the entire series. The mortality, analysed by age group and sex shows an even increase up to the 70th year of life, and then a sharp increase. Among the males, the mortality is higher in all age groups, and the total mortality for men and women separately shows, just like the mortality ratio, that in this series it has been twice as dangerous for a man as for a woman to develop gallstones and to have an operation on this account. This phenomenon must be viewed in connection with the larger number of complicated cases among the men which was reported above and for which we can advance no explanation.

The average mortality among patients over 70 years of age is 11.3 per cent in the total series, but during the most recent years — with the largest number of elderly patients — it is only 6.6 per cent and incidentally still steadily decreasing.

In Table 10 the deaths are plotted against the diagnoses divided into three groups. Practically all the deaths occurred in the complicated groups. The mortality of uncomplicated, pure cholecystolithiasis is as low as 0.14 per cent, while in the most complicated cases it is 7.3 per cent.

Supplementing Table 10 by also plotting the primary deaths against the operation (Table 11), we find that what makes the total mortality so low is the low mortality of the large number of simple interventions in uncomplicated cases. The

Table 10.

*Operative Mortality Among 1,673 Patients Operated upon for Gallstone Diseases During the Period Jan. 1, 1937 to July 1, 1957 by Diagnostic Groups.*

Diagnostic groups	Total number	Mortality per cent
Cholecystolithiasis .....	728	0.14
Cholecystolithiasis + cholecystitis; cholecystitis .....	657	3.2
Cholecystolithiasis + cholecystitis + choledocholithiasis .....	288	7.3

Table 11.

*Operative Mortality Among 1,673 Patients Operated upon for Gallstone Diseases During the Period Jan. 1, 1937 to July 1, 1957, by Type of Operation.*

Type of operation	Total No.	No. of deaths	Mortality per cent
Cholecystectomy .....	1,029	9	0.9
Cholecystect. + exploratory choledochotomy .....	329	12	3.6
Cholecystectomy + choledocholithotomy .....	288	15	5.2
Cholecystolithotomy .....	2	1	50
Cholecystostomy .....	17	4	23.5
Anastomosis operations ...	8	2	25

per cent values in brackets are inapplicable for statistical analysis, as the numbers involved are too small. The high mortality in the group of cholecystostomy is due to the fact that this operation was used only as an emergency intervention for aged and/or very ill patients.

#### OVERLOOKED STONES

In connection with the dependence of the mortality upon sex, age, and complications, there is another factor which stands out and which may be suitably discussed here: Perusal of the autopsy reports for the 43 fatal cases showed that overlooked stones were found in the deep bile ducts in no less than 14 cases, *i. e.* 33 per cent. Which types of intervention had been employed in these 14 cases may be seen from Table 13. Apart from the cholecystostomy group in which there was no opportunity to explore the deep bile ducts (*vide supra*), the highest percentage of failures

Table 12.

*Overlooked Stones in the Deep Bile Ducts in 14 Cases out of 43 Operative Deaths Following Biliary Tract Operations (33 per cent) by Type of Operation.*

Type of operation:	
Cholecystectomy .....	2 (9)
Cholecystectomy + expl. choledochotomy	3 (12)
Cholecystectomy + choledocholithotomy.	6 (15)
Cholecystostomy .....	3 (4)
Other operations .....	0 (3)

was in the group having choledocholithotomy (cf. the account of overlooked stones in the survivors to be reported in a subsequent paper). In five out of the 14 cases, the overlooked calculi were quite small, however, and would no doubt have been of no significance, had the patient survived. The large number of overlooked stones in this fatal group is due, at least partially, to the complicated nature of the cases.

#### CAUSES OF DEATH

Table 13 gives the causes of death found on autopsy in the 43 primary postoperative deaths, grouped into intraperitoneal and extraperitoneal diseases.

Table 13.

*Causes of Death in 43 Cases of Operative Deaths Following Operations for Gallstones.*

Diffuse fibr.-purulent peritonitis ....	8
Cholascos .....	5
Suphren.-subhepat. peritonitis .....	5
Duodenal fistula .....	4
Paralytic ileus .....	1
Intraperitoneal haemorrhage .....	2
Hepatic necrosis .....	1
Anuria .....	4
Shock .....	5
Cardiac-pulm. vasc. ....	6
Sepsis .....	1
Ascending urinary tract infect. ....	1

Diffuse, fibrinopurulent peritonitis without perforation of the viscera has not been encountered as a cause of death since the middle of the nineteen forties, except for one case in 1957.

All five cases of diffuse cholascos were due to leakage in the common duct or cystic duct. In addition, two of the cases of subphrenic-subhepatic peritonitis were biliary abscesses, *i. e.*, localized cholascos. Lastly, three out of the four fatal cases of anuria had been preceded by cholascos. Thus, cholascos was present in a total of 10 cases.

Two out of the four duodenal fistulae arose following anastomosis operations, two resulted from operative injuries, one of them during a transduodenal operation and one during an ordinary, but difficult choledocholithotomy.

Out of the two patients with fatal, postoperative intraperitoneal bleeding, one had a bleeding tendency due to a co-existing, not previously diagnosed hepatitis. The other case was due to a spontaneous rupture of the spleen two weeks after the operation (*vide infra*).

The cases of anuria occurred during recent years, when the patients were tidied over the shock which caused the renal damage.

Postoperative, peripheral circulatory shock (not including the shock in ordinary peritonitis

and in cholascos) has not been observed as a cause of death since 1950. The patient had severe bilateral pulmonary tuberculosis which had not been diagnosed before the operation. The remaining 4 cases occurred in 1940 and 1946; two of them were anaesthetic deaths following segmental spinal anaesthesia.

The only factor of interest in the cardiac-pulmonary-vascular group is that only three fatal pulmonary emboli occurred among the 1,673 patients.

#### TECHNICAL MISHAPS AND ERRORS

Perusal of the case records of the 43 fatal cases revealed that in 15 instances technical mishaps or errors had contributed essentially to the fatal course. Table 14 lists eight cases of suture or ligature insufficiency, recorded as technical mishaps. In two of these cases the anastomosis proved insufficient (it had been established under difficult and unfavourable conditions), in three the suture in the common duct had been insufficient, in two at least because of drifting, and lastly in three cases the stump of the cystic duct had been insufficient, either because the ligature had slid (two cases) or had cut through (one case).

Table 14.

*Technical Mishaps Contributing to the Fatal Course in 8 out of the 43 Operative Deaths Following Gallstone Operations.*

Insufficiency of suture at anastomosis ....	2
Insufficiency of suture in common duct....	3
Insufficiency of cystic stump .....	3

The technical errors (Table 15) were as follows: two duodenal injuries which have been reported above (Table 13), one case in which the hepatic artery had been ligated. (Forceps had been applied blindfold during haemorrhage and led to hepatic necrosis).

The two cases of intraperitoneal bleeding were mentioned above. It may be added that in the former case the technical error consisted in failure to diagnose the bleeding tendency preoperatively, while in the second case a spontaneous splenic rupture was treated by suture instead of splenectomy. Shortly after, the patient died of a secondary rupture.

Table 15.

*Technical Errors Contributing to the Fatal Course in 7 out of 43 Operative Deaths Following Gallstone Operations.*

Duodenal injury .....	2
Injury to common duct .....	1
Ligation of hepatic artery .....	1
Postop. intraperitoneal haemorrhage..	2
Stump of cystic duct and part of gallbladder left behind → peritonitis	1

The last cases listed in Table 15 speak for themselves.

The case of injury to the common duct, which has not been mentioned as yet, gives occasion to discuss the operative injuries to the biliary tract which occurred in the present series.

#### *Injuries to the Biliary Tract in the Course of the Operation.*

In this series of 1,673 operations for biliary tract diseases the deep bile ducts were injured in 11 cases. Five of these injuries were simple small injuries to the walls of the common duct or hepatic duct, which arose during dissection, suture, or ligation, and proved to be of no significance to the further course.

In one case, a *via falsa* was created in the common duct by the passage of an uterine probe. This too had no influence upon the further course.

Out of the remaining 5 cases, *i. e.*, those which are of interest and which make up 0.3 per cent, three consisted in actual cutting or resection of the common duct. In two instances the mishap was discovered immediately, the segments sutured end-to-end, and no postoperative ill effects ensued. In the third case, listed in Table 15, it was not discovered at once. On re-operation, the portal vein was injured, and the patient died of haemorrhagic shock. In none of these cases were there anomalies or special difficulties, *e. g.*, due to inflammation, which might serve as an excuse for the injuries.

The remaining two cases consisted in cutting the right branch of the hepatic duct which opened into the cystic duct, a not uncommon anomaly. In both cases, the right and left hepatic ducts were anastomosed. In one case, it proved necessary later to open an abscess and in the other case remove a towel inadvertently left behind, but otherwise the course was smooth, and both patients are free of symptoms from the biliary tract.

#### SUMMARY

A series of 1,673 patients operated upon for cholelithiasis during the period 1937—1957 was analysed: The number of annual operations on the biliary tract increased 10-fold during this period. In 1937 operations on the biliary tract made up 1.3 per cent and in 1957 4.5 per cent of all operations performed.

The great majority of patients had calculi, but cases of cholecystitis without calculi were also included (about 3 per cent).

The operative rate increased from 40 per cent to 80 per cent.

The ratio males: females averaged 1:3.8, but in the age groups 10—30 and 30—40 it was 1:16

and 1:6 respectively. The majority of the patients were in the age range 40—60 years.

In the course of the period there has been a change in respect to the nature of the disease at the time of operation. During the latter half of the period there were more "uncomplicated" cases of cholelithiasis and fewer inflammatory cases.

More complicated cases were found among the males than among the females. Analysis of the length of the past history showed no correlation between inflammatory complications and a long history and also not a longer history among the males, although they had complications more often than the females.

Phenomena of biliary obstruction occurred in pure cholecystolithiasis more often than assumed *a priori* and more often in women than in men.

In cases complicated by cholecystitis and choledocholithiasis biliary obstruction was most common. However, it was absent in 15—25 per cent of these cases in which it was more common among males than females.

The operative indications have been extended to include everything but resting gallstones. Gradually, many contra-indications have been eliminated. Emergency operation was not used except on vital indication. There has been a pronounced decrease in the number of exploratory choledochotomies (50 per cent) due to the introduction of operative cholangiography. This has enlarged the group of uncomplicated cholecystectomy, and the percentage of positive findings in choledochotomy has increased from 35 per cent to 70 per cent. The absolute number of positive findings in the deep bile ducts has increased by a few per cent.

The number of complications following operations for cholecystolithiasis and cholecystitis has decreased, while it has increased following operations for choledocholithiasis, presumably because of the recently increased use of a common-duct drain.

The mortality has dropped from about 10 per cent to about one per cent in the course of the period under consideration. The total mortality was 2.6 per cent.

Among men it was twice as high as among women. The deaths occurred predominantly among elderly patients and patients with complications. In 33 per cent autopsy revealed overlooked calculi in the deep bile ducts. The causes of death in all cases are discussed. In 15 (35 per cent) technical errors or mishaps contributed essentially to the fatal course. Among the deaths one was caused by a serious, operative injury to the biliary tract. Operative injuries occurred in a total of five cases (0.3 per cent).



## SURGICAL TREATMENT OF CHOLELITHIASIS

## II. LATE RESULTS

By IB ANDERSEN, P. THESTRUP ANDERSEN, THUE POULSEN and BENT RASMUSSEN

In the preceding paper the authors reported on 1,673 operated cases of cholelithiasis. Analysis of this series revealed, among other things, an ever increasing surgical activity in the attitude to the disease. At the same time, the mortality had fallen from a good 10 per cent to a good one per cent in the course of the 20-year period under consideration. The primary postoperative deaths were also discussed.

The present paper deals with the results of a follow-up on 1,386 patients operated upon for cholelithiasis during the period March 1, 1937 to Dec. 31, 1955. The follow-up period ranges from 18 months to 19 years.

Follow-up consisted in sending out a questionnaire asking whether or not the patients had experienced biliary symptoms after the operation. Table 1 lists the results.

Table 1.

*Follow-up on 1,386 Patients Operated upon for Cholelithiasis During the Period Jan. 1, 1937 to Dec. 31, 1955.*

Died during follow-up period ..	130 ( 7.0 per cent )
Not traced .....	66 ( 4.8 » » )
Answered questionnaire .....	1,217 (87.8 » » )
Total number followed up ....	1,386 patients

A total of 103 patients, or 7.4 per cent, had died during the follow-up period. Through the Medico-statistical Section of the Health Service, the cause of death in 73 cases was ascertained. None of them had succumbed to their biliary tract diseases or their sequelae. Sixty-six patients (4.8 per cent) could not be traced.

Thus, the follow-up series comprises 1,217 patients, a follow-up percentage of 87.8. When including the 73 patients who died during the follow-up period and whose causes of death are definitely known, the follow-up percentage is 93.1.

Table 2.

*Result of Answers to Questionnaire from 1,217 Patients Operated upon for Cholelithiasis During the Period Jan. 1, 1937 to Dec. 31, 1955.*

1,217 patients	symptom-free ...	743 (61.1 per cent)
answered	patients having	
questionnaire	symptoms .....	474 (38.9 » » )

From Table 2 it will be seen that 743 patients (61.1 per cent) answered in the negative and are

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Table 3.

*Distribution by Symptoms of 474 Patients Included in the Follow-up and Operated upon During the Period Jan. 1, 1937 to Dec. 31, 1955, and Follow-up Examined by one of the Authors.*

	Number	Per cent of total series
Definitely overlooked stones .....	35	
Probably overlooked stones .....	15	6.6 (including deaths 7.4 per cent)
Probably overlooked stones which had been passed .....	30	
Dyskinesia .....	197	16.2
Dyspepsia .....	111	9.3
Uncertain, other diseases .....	86	7.2

therefore classified as symptom free. These patients were not submitted to further examination. On the other hand, 474 patients (38.9 per cent) had experienced symptoms. These patients were interviewed and examined by one of the authors. A few of them had been admitted to other hospitals, and in that case the data were obtained instead from the hospitals concerned.

On the basis of the follow-up study the 474 patients were divided into 6 groups according to the nature of the symptoms. Thirty-five exhibited definite signs of overlooked stones in the deep bile ducts, demonstrated by intravenous cholangiography, re-operation or in the faeces.

Patients with presumably overlooked stones had symptoms in the form of severe, frequent colicky attacks with fever and/or jaundice. Thirty patients had to be assigned to a special group of presumably overlooked stones which had been passed. This group comprises patients with a history of one or a few severe colicky attacks shortly after the operation, including fever and/or jaundice, and thereafter no further symptoms.

A total of 80 patients must be presumed to have or have had overlooked stones, *i. e.* 6.6 per cent of the follow-up series. When including also the 14 operative deaths in which autopsy disclosed overlooked stones (*cf.* preceding paper), this group counts 94 patients. In other words, overlooked stones were found in 7.4 per cent of the entire follow-up series.

In the group of dyskinesia, we included patients with a history of recurrent pain suggesting biliary colic after the operation. In a few cases, the pain had been accompanied by mild, short-lasting jaundice but without demonstrable stones

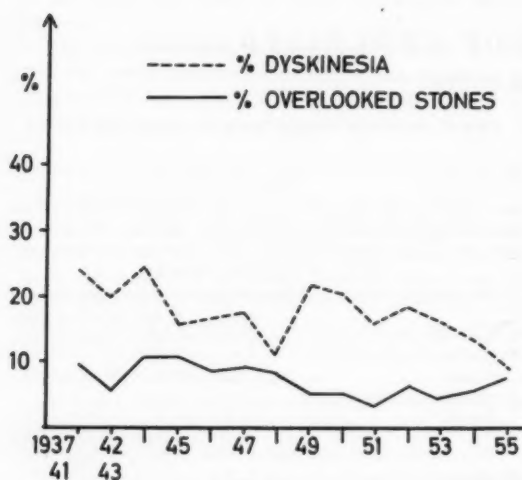


Fig. 1.

Percentage of Dyskinesia and Definitely + Probably Overlooked Stones in the Biliary Tract Among 474 Patients Included in the Follow-up and Operated upon During the Period Jan. 1, 1937, and Dec. 31, 1955.

on intravenous cholangiography. This group includes 197 cases, *i. e.* 16.2 per cent of the follow-up series.

The percentage of dyskinesia of overlooked stones for each year of the period are plotted on Fig. 1 in which the groups from 1937—41 and 1942—43 are considered together. The percentage of overlooked stones shows a tendency to fall. The two curves tend to meet and part at the same sites. Thus, where there is a decrease in the number of overlooked stones, there is an increase in the number with dyskinesia. This might indicate that we have not entirely succeeded in distinguishing between the cases with probably overlooked stones and those with dyskinesia, but the finding is very uncertain and, indeed the two curves cannot be united into a straight line.

However, there is another finding which points in the same direction: Table 4 gives the distribution of males and females in the groups without and with symptoms. In the case of the latter group, the age distribution of patients with dys-

Table 4.

Ratio Males: Females in the Total Series (1,673 Patients), Follow-up Series (1,217 Patients), and in 474 Patients Exhibiting Symptoms at Follow-up. The Latter are Grouped by Nature of Symptom.

	Entire series, 1,673	Follow-up series, 1,217	Symptom free 743	With symptoms 474	Dyskinesia 197	Definite stones 35	Probably overlooked stones 15	Probably overlooked stones, had been passed 30
M/F	1/3.8	1/4.0	1/3.1	1/6.7	1/10.6	1/4.8	1/14	1/4.0

kinesia and overlooked stones is also shown. In the total series this ratio was 1:3.8. Only two groups show a material divergence, *i. e.*, the group of dyskinesia which shows a marked female preponderance (1:10) and the group of probably overlooked stones in which the ratio is 1:14. This might indicate that some of the cases assigned to the group of probably overlooked stones are in fact cases of dyskinesia, unless they belong to the age group 10—30 years in which the sex ratio is 1:16 (*cf.* preceding paper). However, the average age of the 15 patients with probably overlooked stones is about 50 years, corresponding to that in the entire series.

The low values in the dyskinesia curve for 1954—1955 are presumably due to the short follow-up period.

At follow-up 111 patients (9.3 per cent) complained of gastric dyspepsia, especially after eating fat and smoked foods. The majority of these patients had a history of dyspepsia of the same nature also prior to the operation, so that in most cases it cannot be considered a sequel to the operation.

The last group in Table 3 comprises patients who had uncertain symptoms — presumably not from the biliary tract — or symptoms due to other diseases.

Table 5.

Distribution, by Diagnosis on Admission, of 277 Patients Having Symptoms at Follow-up Interpreted as Sequelae to Their Cholelithiasis.

Diagnoses	No.	Dyskinesia	Dyskinesia in per cent	Overlooked stones	Overlooked stones in per cent
Cholecystolithiasis ...	555	101	18.2	32	5.8
Cholecystolithiasis + cholecystitis .....	474	71	14.9	27	5.7
Cholecystolithiasis + cholecystitis + choledocholithiasis .....	89	10	11.2	15	16.8
Cholecystolithiasis + choledocholithiasis .	103	15	14.6	6	5.8
Total ....	1,217	197	16.2	80	6.6

Table 5 gives the cases of dyskinesia and overlooked stones compared with the diagnoses made at operation. The first and last diagnostic groups comprise cases with calculi only, whereas the second and third groups comprise calculi complicated by inflammation. The percentage of overlooked stones is the same in the first, second, and fourth groups (5.7—5.8 per cent), whereas in the third group, that of the most complicated cases, overlooked stones were found in 16.8 per cent. Out of the 15 cases in this latter group, 12 had definitely overlooked stones. In other words, the risk of overlooking stones is greatest in the most complicated cases. Conversely, dyskinesia

Table 6.

*Distribution, by Type of Operation, of 80 Patients Showing Definitely or Probably Overlooked Stones at Follow-up.*

Type of operation	Calculi total	Total number operated	Overlooked stones in per cent
No choledochotomy . . . . .	49	780	6.3
Expl. Choledochotomy . . . .	10	263	3.8
Choledocholithotomy . . . . .	21	174	12.1
Total . . . . .	80	1,217	6.6

appears to be less common in the complicated than in the uncomplicated cases.

From Table 6 it may be seen that the percentage of overlooked stones is highest in the group having choledocholithotomy. Among these patients 12.1 per cent had overlooked stones, definitely diagnosed in the great majority. Thus, the highest percentage of unsuccessful operations appears to be due to the failure to remove all the stones for which the operation was performed. The numerically largest number of overlooked stones, a total of 49, on the other hand, is contained in the group where no search has been made for stones. In 18 of these 49 cases the diagnosis of overlooked stones is definite. During recent years, the routine use of operative cholangiography has materially decreased the number of overlooked stones.

In Table 7 the cases with dyskinesia are divided into 5 groups according to the nature of the symptoms. The first group includes patients in whom the attacks of dyskinesia arose from 6 months to 2 years after the operation. Group 2 comprises patients who had attacks of pain immediately after the operation, attacks which had then gradually subsided or entirely disappeared. These 2 groups represent about 50 per cent of all the cases suffering from dyskinesia. Six patients (3.0 per cent) had increasing biliary colics throughout the follow-up period. In 84 cases (42.8 per cent) the symptoms of dyskinesia were constant throughout the follow-up period. Lastly, nine cases (4.6 per cent) had to be grouped as uncertain. These patients exhibited syndromes which were not quite clear, but had to be assigned

Table 7.

*Distribution, by Nature of Symptoms, of 197 Patients Having Dyskinesia at Follow-up.*

	No.	Per cent
Symptom free interval of 6 months —about 2 years . . . . .	49	24.8
Attacks of pain occurred immediately after operation and then subsided . . . . .	49	24.8
Increasing symptoms . . . . .	6	3.0
Constant symptoms . . . . .	84	42.8
Uncertain symptoms . . . . .	9	4.6

Table 8.

*Distribution, by Type of Operation, of 197 Patients Having Dyskinesia at Follow-up.*

Operation	Total number	No. having dyskinesia	per cent
No choledochotomy . . . . .	780	136	17.4
Expl. choledochotomy . . . .	263	40	14.2
Choledocholithotomy . . . . .	174	21	13.8

to dyskinesia. If all the cases of dyskinesia are grouped traditionally into severe and mild, only 2.7 per cent of all the patients included in the follow-up had severe, disabling dyskinesia after the operation.

When plotting the dyskinesias against the same three operation groups as in the case of overlooked stones (Table 8), we find that most of the cases occur within the group which did not have choledochotomy. This means that dyskinesia occurs by preference in the uncomplicated cases, as also indicated by Table 5.

Table 9.

*Result of Following-up in 825 Patients Whose Admission data Included Definite X-ray Findings of Functioning or Non-functioning Gallbladder.*

	Functioning gallbladder	Non-functioning gallbladder	Functioning gallbladder in per cent of all cases
Dyskinesia . . . . .	83	107	43.7
No symptoms . . . . .	156	479	24.6

Studying the X-ray signs of functioning and non-functioning gallbladder in patients with dyskinesia and patients who were free of symptoms at follow-up, we find that among those with dyskinesia 43.7 per cent had functioning gallbladder, while among the patients who were symptom free the gallbladder was functioning in 24.6 per cent.

This accords with what has been stated above, *viz.*, that dyskinesia occurred predominantly among the uncomplicated cases. Accordingly, it would appear likely that the pain experienced by patients with cholecystolithiasis may in some cases be caused by the very mechanism which elicits dyskinesia.

Thus, as regards severe or fairly severe symptoms following operation for cholelithiasis, we found 33 cases of severe dyskinesia (2.7 per cent) and 80 cases of overlooked stones (6.6 per cent) *i.e.* a total of 113 cases out of 1,217 or 9.3 per cent. However, of the group with overlooked stones more than one-third (30 patients or 2.5 per cent of the follow-up series) were rapidly relieved of symptoms after passing the stones, and the great majority of the definitely overlooked stones (in 35 patients or 2.8 per cent) were removed by operation. This leaves 4–5 per cent of the pa-

tients followed up who had severe biliary tract symptoms after the operation.

#### SUMMARY

In a follow-up on 1,217 patients operated upon for cholelithiasis, 743 were found to be completely symptom free. Among 474 patients with

symptoms following biliary tract operation 80 of the entire series (6.6 per cent) had overlooked stones, 197 (16.2 per cent) dyskinesia, 111 (9.3 per cent) dyspepsia, and 86 (7.2 per cent) other symptoms not derived from the biliary tract. Severe disabling symptoms were present in 4-5 per cent.

## GAS-FILLING AS A DIAGNOSTIC AID IN X-RAY EXAMINATION OF THE STOMACH PARTICULARLY THE FUNDUS

By CARL E. LAMPE

The improvement in the prognosis for cancer of the stomach in recent years is partly due to the decrease in primary operation mortality and partly to the fact that an increasing number of those operated upon can be considered to be definitely cured. See, *inter alia*, Zacho & Fischermann (16).

To improve the prognosis further it is essential that the diagnoses be made quickly after the appearance of the symptoms. One of the most important means to this end is the X-ray examination, which, however, often fails, as the contrast medium obscures the tumour. This is especially true of fundus cancer.

It is the purpose of this article to demonstrate the importance of supplementing the usual contrast examination of the stomach with a further examination, following gas-filling of the stomach. This examination is well-known but seldom used.

#### PREVIOUS INVESTIGATIONS

There is a great deal of literature on the frequency with which X-ray examination for cancer of the stomach is valueless. Special surveys of fundus cancer have also appeared.

Kirklin (8) found that  $\frac{1}{3}$  of his cases of fundus cancer screening revealed abnormality.

Antoine & Stehlin (1) found, amongst 47 cases, 10 (21 per cent) wrongly diagnosed.

Finby & Eisenbud (5) found that of 62 cases of cancer in the proximal third of the stomach 13 per cent were overlooked and 15 per cent were misinterpreted. The chief reasons were watertrap stomach and hiatus hernia.

X-ray examination of the stomach after gas-filling was first employed in 1896 by Levy (9) and Granmark (6).

From the Roentgen Diagnostic Department (Head: B. Worning) and the Surgical Department (Head: A. Zacho) of the Finsen Institute, Copenhagen.

Various methods are described:

I. Gas-filling of the stomach can be obtained by any one of the four following methods:

1. Administration of soda water, Bendick (2).
2. Administration of an effervescent, Vallebøna (15).
3. Insufflation through a tube in the stomach, Hilpert (7), Ruzicka & Riegler (14) and Eiken (3).
4. Inflation of a thin rubber bulb introduced into the stomach, D'Eloia (4).

Finally, a close study of spontaneous fundus bubbles must not be omitted, Kirklin (8) and Rimondini (13).

II. Gas-filling can be accomplished:

1. Without the intake of radiopaque contrast, Lysholm (10), Ragaglini (12) and Rimondini (13).
2. With a concomitant intake of radiopaque contrast whereby a double contour is obtained, Bendick (2) and Eiken (3).

III. The gas in the stomach can be supplemented with the introduction of gas into the peritoneal cavity followed by tomography, so-called paretography, Porcher (11).

#### METHOD

The spontaneous fundus bubble must first be mentioned.

The examination is made without radiopaque contrast as we are of the opinion that this is merely a hindrance.

The stomach is then filled with gas, usually obtained with an effervescent (5 g citric acid in a little water followed by 5 g sodium bicarbonate in a little water) or with soda water. For the examination of the corpus or the antrum the



Tabel 1.  
111 Cases of Fundus Cancer of the Stomach.

First X-ray diagnosis:		Final X-ray diagnosis:	
No abnormality .....	20	Cancer of the cardia .....	20
Benign disease .....	15	Benign disease .....	3
		Cancer of the cardia .....	12
Cancer of the oesoph. ....	32	Benign disease .....	1
		Cancer of the oesophagus .....	11
Cancer of the cardia .....	44	Cancer of the cardia .....	20
		Cancer of the cardia .....	44
Total .....	111	Total .....	111

gas is insufflated through a tube. The patient stands upright for examination of the fundus and is recumbent for examination of the distal part of the stomach.

After gas-filling, a tumour, if present, will appear as a shadow protruding into the gas-filled stomach. Besides the diagnostic information a better impression of the spread of the tumour is obtained. A considerable gas distension is necessary for the resilience of the stomach wall to be deduced.

#### MATERIAL

Examination by gas-filling has been employed at the Roentgen Department of the Finsen Institute in about 500 cases during the past 25 years. To assess the value of this examination more closely a survey has been made of 111 cases of fundus cancer; for it is for this disease that the examination is most important. The cases range from 1948 to 1957, both years included; all have been verified by operation at the surgical department of the Finsen Institute. The results of the first X-ray examination after the initial appearance of the symptoms, and of the final examination before operating, have been compared, and the influence of the gas examination then considered. This examination had been performed at the first X-ray examination in one case only. The great majority of first examinations were made at other hospitals.

In 35 cases, or 31.5 per cent of all cases, the fundus cancer was misinterpreted at the first X-ray examination. The reason for the wrong diagnosis was, in the majority of cases, non-representation of the pathology. In only a few cases was it represented and observed but misinterpreted. At a later X-ray examination the diagnosis of cancer was made in 32 cases. In 19 of these the examination had been supplemented with gas examination; and in 10 cases it was solely due to this examination that the diagnosis was made.

The date of operation was considerably delayed by the wrong X-ray diagnosis as only 12 of the 35 were operated upon within the first 2 months following the first X-ray examinations.

In 23 cases over 2 months had elapsed, in 8 of these over 6 months.

Of the 32 cases where the diagnosis of cancer of the oesophagus was made at the first X-ray examination, there were 20 where, a spreading to the fundus was discovered, at a later examination. In 13 cases this finding was due to gas examination. This examination had only been performed in one instance at the first X-ray examination.

In the 44 cases where the diagnosis of cancer of cardia, or a suspected case of this disease, had been made at the first X-ray examination, the gas examination gave a better representation of the extension of the tumour than the radiopaque examination.

Gas examination was performed in 68 cases in all. In 23 of them it was this examination alone that gave the correct diagnosis. This proves that it is in large part due to this examination that so few wrongly diagnosed cases were found at later X-ray examinations.

The following case histories give further substantiation of this statement.

#### CASE HISTORIES

##### Patient I.

Man, 67 years, with difficulty in swallowing for two months. At X-ray examination with radiopaque only, at another hospital, a diagnosis of ulcer was made. The roentgenograms showed such density that it was impossible to detect the tumour. At a later X-ray examination, following gas-filling of the stomach at this department, the roentgenograms showed large humpy masses of tumour in the medial half of the stomach up to the fundus. Operation disclosed a large, broad-based papilliferous adenocarcinoma. See Figs. 1 and 2.

The following two cases demonstrate the applicability of the method for cancer of the corpus.

##### Patient II.

Man, 65 years, with 2 months' worsening of a long-standing dyspepsia. In the course of 4 months 4 X-ray examinations with radiopaque were made without any sign of a tumour being discovered. In all the

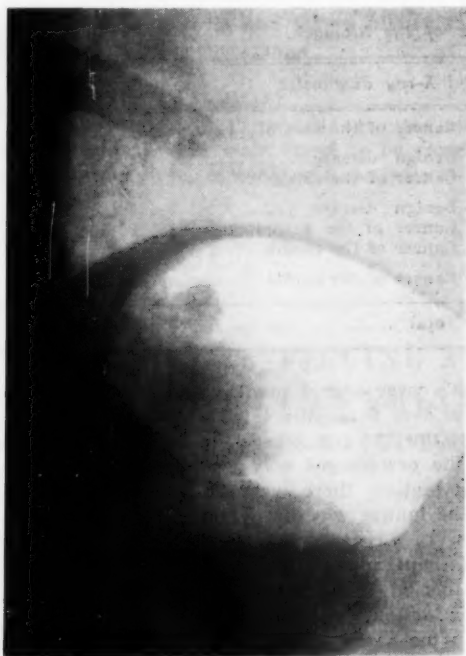


Fig. 1.

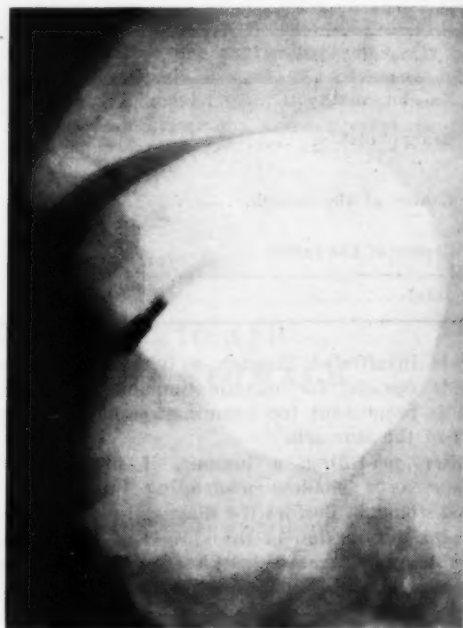


Fig. 3.



Fig. 2.



Fig. 4.

examinations the tumour was obscured by the contrast medium. At a further examination with gas 2 months later a large tumour was seen on the centre of the *curvatura minor*. This finding was verified by operation. See Figs. 3 and 4.

#### *Patient III.*

Man 53 years, with dyspepsia for 6 months. At the first X-ray examination, with radiopaque only, cancer was suspected. A supplementary gas examination was made immediately after, and a large tu-



Fig. 5.

mour, verified by operation, was found in the corpus and the fundus. See Fig. 5.

Finally, a case where gas examination produced the diagnosis of ulcer.

#### *Patient IV.*

Man, 67 years, with repeated hematemesis for 4 years. Several X-ray examinations with radiopaque had revealed no abnormality. One of the examinations had even been made with both contrast medium and gas. At the last X-ray examination, which was made here, the contrast examination was supplemented with an examination of the stomach after gas-filling alone. Hereby a soft tissue tumour was found in the medial part of the fundus, hitherto obscured at former examinations by the contrast medium. The operation disclosed a non-malignant ulcer with infiltration. See Figs. 6 and 7.



Fig. 6.

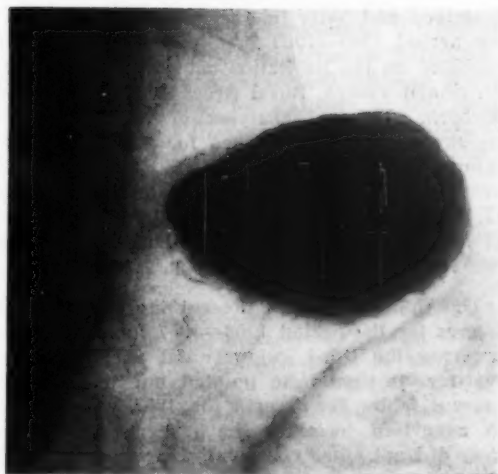


Fig. 7.

#### CONCLUSION

I. X-ray examination of the gas-filled fundus of the stomach is a valuable addition to the usual routine radiopaque examination, as tumours that are obscured by contrast medium appear as soft tissue shadows. Moreover, this examination gives, better information of the extent of the tumour.

II. The examination is well-known but it too little employed. Even though the usual contrast examination shows normal conditions a supplementary gas examination should be made in cases where the case history gives cause for suspicion.

#### SUMMARY

A scrutiny of 111 case records of patients with fundus-cancer of the stomach from the surgical department of the Finsen Institute reveals that in 35 instances tumours were overlooked or misinterpreted at the first X-ray examination. At a later examination cancer was diagnosed in 32 instances. In 10 of these the diagnosis was based on a supplementary X-ray examination of the gas-filled stomach.

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## CANCER INCIDENCE IN DENMARK 1953 TO 1957

## BASIC FIGURES

By JOHANNES CLEMMESSEN and GORKI SCHULTZ, B. P. Sc.

In earlier publications (1, 3, 4, 5) the working methods of the Danish Cancer Registry have been described and basic figures have been given for the period 1943—1953 incl. for both sexes, distributed on the habitation categories of Capital, Provincial Towns, Rural Areas and Copenhagen Suburbs. Detailed analyses of the results of registration have been given for tumours of the urinary system and prostate (6), for malignant neoplasias of hæmopoietic and connective tissues (7), and for carcinomas of the digestive system (8), and a general review of Danish results in this field has also appeared (2).

The following tables present the fundamental figures for the period 1953—1957 inclusive, thus covering the third quinquennial period of the registry. It should be pointed out that in the present tables the figures for 1953 will appear in a revised form. In the earlier publications they did not enter computations, which covered the two first quinquennial period, but were given in order to bring figures up to date as far as possible. While revisions do not affect the figures to any significant extent they still serve to emphasize the fact that late reports of some cases tend to prolong the period necessary before the publication of results. In the present publication a

weak trend to this effect may be reflected in slightly lower figures for 1957 than for 1956.

Figures are given for each sex, separately for the four habitation categories of the country, of which the capital covers about 1 million, provincial towns 1 million, rural areas two millions and Copenhagen suburbs about 300,000 inhabitants. The last category has been established only with the purpose of avoiding confusion, but is at present too insignificant to allow conclusions.

The population at risk is specified in the Tables 1, 2 and 3 so as to give the possibility of computation of rates for single years, and to give a characterization of the population with regard to age distribution.

Table 1.  
Urban Population, October 1st, 1955.

København .....	753.361
Frederiksberg .....	117.778
Gentofte .....	89.180
Capital, total .....	960.319
Copenhagen Suburbs .....	295.957
Aarhus .....	118.943
Odense .....	105.915
Aalborg .....	83.210
14 towns with 20.000 or more inhabitants	406.958
16 » » 10—20.000 inhabitants ....	237.333
14 » » 7—10.000 » ....	121.882
7 » » 5—7.000 » ....	37.000
11 » » 3—5.000 » ....	41.671
8 » » 2—3.000 » ....	18.533
12 » » less than 2.000 inhabitants	17.393
Provincial Towns, total .....	1.188.838

From The Danish Cancer Registry under the National Anti-Cancer League, Strandboulevard 49, København Ø.

With support by Research Grant C 3087. Path. from the National Institutes of Health, U. S. Public Health Service.



Table 2.  
Mean Population 1953 to 1957.

	Capital	Provincial Towns	Rural Areas	Copenhagen Suburbs	Whole Country
<b>MEN</b>					
1953 .....	450.410	558.570	1.033.239	125.241	2.167.460
1954 .....	449.610	564.990	1.039.190	132.930	2.186.720
1955 .....	447.810	570.440	1.043.500	140.800	2.202.550
1956 .....	444.826	574.318	1.048.127	147.920	2.215.191
1957 .....	441.200	577.697	1.051.198	154.540	2.224.635
<b>WOMEN</b>					
1953 .....	517.730	605.080	950.932	128.078	2.201.820
1954 .....	515.670	612.420	955.780	135.970	2.219.840
1955 .....	513.000	618.880	960.540	144.030	2.236.450
1956 .....	509.078	623.454	967.418	151.330	2.251.280
1957 .....	505.771	628.415	970.910	158.100	2.263.196

Table 3.  
Mean Population Distributed According to Age and Sex.  
1953—57.

Age	Capital	Provincial Towns	Rural Areas	Copenhagen Suburbs
<b>MEN</b>				
0—4 .....	30.752	52.395	94.103	15.852
5—9 .....	36.612	56.623	105.246	13.931
10—14 .....	35.490	50.244	98.590	11.798
15—19 .....	28.821	38.275	82.628	8.698
20—24 .....	31.259	34.899	68.241	9.511
25—29 .....	30.718	37.455	63.167	13.145
30—34 .....	30.950	41.675	68.142	13.227
35—39 .....	32.212	40.558	66.878	12.219
40—44 .....	34.147	39.798	69.774	10.129
45—49 .....	34.071	38.007	67.112	8.501
50—54 .....	30.171	32.990	60.923	6.692
55—59 .....	26.825	29.065	53.150	5.233
60—64 .....	22.243	24.108	44.478	4.012
65—69 .....	16.913	20.139	37.147	3.030
70—74 .....	12.259	15.760	28.732	2.217
75—79 .....	8.115	10.125	19.592	1.291
80— .....	5.213	7.087	15.148	800
Total .....	446.771	569.203	1.043.051	140.286
<b>WOMEN</b>				
0—4 .....	28.825	49.712	89.581	15.059
5—9 .....	35.004	54.215	100.068	13.445
10—14 .....	34.563	48.869	92.817	11.907
15—19 .....	30.437	44.219	69.267	9.550
20—24 .....	32.855	44.069	54.642	11.305
25—29 .....	31.537	43.077	59.238	13.224
30—34 .....	35.347	45.380	63.575	13.763
35—39 .....	37.884	43.206	60.835	12.710
40—44 .....	40.187	41.938	64.259	10.083
45—49 .....	40.487	40.516	62.063	8.465
50—54 .....	37.720	37.045	56.310	6.695
55—59 .....	34.297	33.638	50.907	5.215
60—64 .....	28.687	28.247	43.280	4.169
65—69 .....	23.877	23.929	35.437	3.222
70—74 .....	18.685	18.413	26.935	2.307
75—79 .....	12.647	12.010	17.502	1.397
80— .....	9.211	9.167	14.400	986
Total .....	512.250	617.650	961.116	143.502

The justification of giving these results in detail should be sought in their considerable regularity, and in the accuracy with which the registration system seems to function in this country. On the basis of these and earlier publications it is now possible to follow the development in the field of cancer for fifteen years so that trends are now becoming discernable in spite of the small size of the population at risk.

While figures as those here presented will not attract readers in the usual sense of this term, it is the experience of the authors, that the easy access to these results for physicians in clinical research has in the past contributed inspiration to further studies, and has formed the basis of the collection of material for statistics in treatment etc. To the Cancer Registry it seems a fundamental duty to present these results to its contributors — the hospital physicians.

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164 Lung (not stated as primary) . . . . .	137	184	217	206	180	924	6	9	6	9	5	35	0.11	11
165 Mediastinum . . . . .	6	8	10	10	7	41	3.25	10	43	54	63	54	282	0.86
166 Tumor of lung . . . . .	23	36	38	28	20	145	0.33	6	2	2	4	10	23	0.07
170 Breast, carcinoma . . . . .	11	7	10	10	9	56	0.20	3	1302	1136	1366	1387	680	0.34
Sarcomata**):	1	—	—	—	1	1	0.00	—	1	5	4	1	3	0.01
Other and unspecified sarcoma . . . . .	—	—	—	—	—	—	0.00	—	—	—	—	—	20	0.06
171—174 Uterus . . . . .	—	—	—	—	—	—	—	—	1144	1073	1165	1257	1235	5874
171 Cervix . . . . .	—	—	—	—	—	—	—	—	779	736	772	834	824	3945
172 Corpus . . . . .	—	—	—	—	—	—	—	—	305	276	323	340	322	1566
173 Chorionepithelioma, etc. . . . .	—	—	—	—	—	—	—	—	3	—	—	—	6	9
174 Unspecified . . . . .	—	—	—	—	—	—	—	—	34	45	56	53	63	251
Sarcomata**):	—	—	—	—	—	—	—	—	—	—	—	1	—	1
Other and unspecified sarcoma . . . . .	—	—	—	—	—	—	—	—	23	16	14	29	20	102
175—176 Other female genital organs . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—
175 Ovary . . . . .	—	—	—	—	—	—	—	—	448	432	456	472	409	2217
175.1 Fallopian tube and broad ligament . . . . .	—	—	—	—	—	—	—	—	376	360	379	382	327	1824
176.0 Vulva . . . . .	—	—	—	—	—	—	—	—	3	9	3	11	5	31
176.1 Vagina . . . . .	—	—	—	—	—	—	—	—	48	35	41	51	53	228
Other and unspecified parts . . . . .	—	—	—	—	—	—	—	—	19	26	26	22	17	110
Sarcomata**):	—	—	—	—	—	—	—	—	—	—	—	—	3	3
Other and unspecified sarcoma . . . . .	—	—	—	—	—	—	—	—	2	2	7	6	4	21
177—179 Male genital organs . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—
177 Prostate . . . . .	584	653	653	643	664	3197	11.22	—	—	—	—	1	2	3
177.1 Testis . . . . .	472	520	525	527	549	2593	9.10	2	—	—	—	1	2	3
178 Penis . . . . .	83	98	81	89	87	438	1.54	15	—	—	—	—	—	—
179.0 Scrotum . . . . .	26	32	41	23	24	146	0.51	—	—	—	—	—	—	—
179.1 Other and unspecified parts . . . . .	—	—	1	1	1	2	0.01	—	—	—	—	—	—	—
Sarcomata**):	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other and unspecified sarcoma . . . . .	1	2	2	2	1	8	0.03	—	—	—	—	—	—	—
179.8—179.9 Other and unspecified sarcoma . . . . .	2	1	3	1	2	9	0.03	—	—	—	—	—	—	—
180—181 Urinary organs . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—
180 Kidney . . . . .	403	435	399	443	519	2199	7.72	—	187	226	215	230	239	1097
181.0 + papilloma . . . . .	111	147	128	141	181	708	2.49	8	95	124	100	115	124	558
181.8 Bladder, carcinoma and papilloma . . . . .	286	282	268	295	331	1462	5.13	2	88	96	110	110	108	512
Sarcomata**):	3	5	2	5	4	19	0.07	—	2	5	3	4	4	18
Other and unspecified sarcoma . . . . .	1	—	—	—	—	—	0.00	—	—	—	—	1	1	2
190—191 Skin . . . . .	2	1	1	2	3	9	0.03	—	2	1	1	1	2	7
190 Melanoma . . . . .	629	612	643	678	651	3213	11.28	—	447	444	514	490	501	2396
191 { Other malignant neoplasms of skin . . . . .	48	40	32	43	52	215	0.76	—	68	45	65	58	78	314
Sarcomata**):	572	561	606	614	592	2945	10.34	37	364	388	431	420	406	2009
Other and unspecified sarcoma . . . . .	4	4	—	5	2	15	0.05	1	7	2	5	5	5	24
191 Lympho- and reticulosarcoma . . . . .	—	2	1	6	—	9	0.03	—	—	—	2	2	1	5
Other and unspecified sarcoma . . . . .	5	5	4	10	5	29	0.10	—	8	9	11	5	11	44

(Cont.)

\*) Manual Internat. Statistical Classification. Bull. W.H.O. Suppl. 1., 1948.

\*\*) Sarcomata have been specified according to site for total only — see last column.

\*\*\*) Revised figures.

Cases of Malignant Neoplasms in Denmark 1953-57. DENMARK.

W. H. O. Code No. <sup>a)</sup>	Site	Men					Women											
		Men					Women											
		1953 ***	1954	1955	1956	1957	Total 1953- 1957	% of all mal. neopl.	Sarco- mata 1953- 1957	1953 ***	1954	1955	1956	1957	Total 1953- 1957	% of all mal. neopl.	Sarco- mata 1953- 1957	
193	Brain and nervous system	147	154	154	189	182	826	2.90		128	132	155	174	159	748	2.29		
193.0	Brain	106	124	132	158	147	667	2.34	5	76	92	100	116	110	494	1.51	8	
193.1-193.9	Other parts	33	27	22	23	31	136	0.48	18	42	36	52	51	44	225	0.69	21	
Sarcomata**:	Lympho- and reticulosarcoma	—	1	—	2	—	3	0.01	—	—	—	—	—	—	—	—	—	
	Other and unspecified sarcoma	8	2	—	6	4	20	0.07	—	10	4	3	7	5	29	0.09	—	
192, 194-196	Other sites	55	68	67	73	73	336	1.18		61	84	97	101	98	441	1.35		
192	Eye	15	22	27	27	20	111	0.39	7	19	15	16	27	21	98	0.30	10	
194	Thyroid	14	14	10	14	18	70	0.25	1	25	47	48	38	46	204	0.62	10	
195.0	Suprarenal gland	2	6	3	9	8	28	0.10	—	3	4	3	7	7	24	0.07	—	
195.2	Thymus	2	2	2	1	2	9	0.03	—	1	—	1	1	4	7	0.02	—	
196.0	Bones of skull and face	—	—	—	1	—	1	0.00	—	—	—	2	—	—	2	0.01	1	
Sarcomata**:(196.2-9)	Bones and joints	22	20	24	19	24	109	0.38	—	10	13	23	19	20	85	0.26	—	
	Lympho- and reticulosarcoma	—	—	—	—	—	—	—	—	1	—	3	2	3	9	0.03	—	
	Other and unspecified sarcoma	—	4	1	2	1	8	0.03	—	2	5	1	4	—	12	0.04	—	
199	Unspecified sites	74	73	80	68	65	360	1.27		144	153	150	132	147	726	2.23		
199.1	Head and neck	2	4	5	4	1	16	0.05	13	—	1	—	1	2	4	0.01	13	
199.2	Thorax and pericardium	—	1	1	—	—	2	0.01	8	—	—	1	—	—	2	0.01	7	
199.3	Abdomen	65	60	69	57	56	307	1.08	—	136	138	143	124	132	673	2.06	—	
199.4	Pelvis	—	1	1	—	—	2	0.01	8	2	6	1	2	4	15	0.05	4	
199.9	Other unspecified sites	—	—	—	1	1	3	0.01	1	1	2	2	—	2	7	0.02	1	
Sarcomata**:	Lympho- and reticulosarcoma	3	4	2	3	5	17	0.06	—	1	4	1	2	5	13	0.04	—	
	Other and unspecified sarcoma	4	3	1	3	2	13	0.05	—	3	2	2	3	2	12	0.04	—	
156 partly, 165, 198, 199.6	Metastases	95	64	70	66	65	360	1.26		96	83	88	71	99	437	1.34		
197	Connective tissue	39	34	35	26	23	157	0.55		55	40	24	25	22	166	0.51		
200.0-200.1	Lymph system:	10	10	4	3	5	32	0.11		32	8	5	8	2	3	26	0.08	
200.2	Lympho- and reticulosarcoma	6	4	2	4	4	20	0.07	20	5	5	1	1	—	12	0.04	12	
202	Other and unspecified sarcoma	14	43	50	49	72	228	0.80		15	38	36	38	33	160	0.49		
201	Lymphogranulomatosis, Hodgkin	68	50	61	59	68	306	1.07		52	40	46	33	37	208	0.64		
203	Multiple myeloma	34	57	43	63	58	255	0.90		33	41	37	50	42	203	0.62		
204.0	Lymphatic leukemia	95	91	134	128	115	563	1.98		51	51	57	56	57	272	0.83		
204.1	Myeloid leukemia	54	65	53	69	68	309	1.09		59	58	77	67	68	329	1.01		
204.2-204.4	Leukemia, other and unspecified	33	34	28	37	33	165	0.58		22	25	8	29	16	100	0.31		
205	Mycosis fungoides	8	3	6	4	2	23	0.08		1	3	1	5	4	14	0.04		





Cases of Malignant Neoplasms in Denmark 1953-57. CAPITAL.

W. H. O. Code No. 1)	Site	Men					Women										
		1953 (**)	1954	1955	1956	1957	Total 1953- 1957	% of all mal. neopl.	Sarco- mata 1953- 1957	1953 (**)	1954	1955	1956	1957	Total 1953- 1957	% of all mal. neopl.	Sarco- mata 1953- 1957
171-174	Uterus .....	—	—	—	—	—	—	—	—	427	378	384	448	420	2057	20.09	—
171	Cervix .....	—	—	—	—	—	—	—	—	300	259	265	299	278	1401	13.68	1
172	Corpus .....	—	—	—	—	—	—	—	—	113	108	103	128	118	570	5.57	25
173	Chorionepithelioma, etc. ....	—	—	—	—	—	—	—	—	—	—	—	—	1	1	0.01	—
174	Unspecified .....	—	—	—	—	—	—	—	—	10	6	12	10	21	59	0.58	—
Sarcomata**):	Lympho- and reticulosarcoma .....	—	—	—	—	—	—	—	—	—	—	—	1	—	1	0.01	—
	Other and unspecified sarcoma .....	—	—	—	—	—	—	—	—	4	5	4	10	2	25	0.24	—
175-176	Other female genital organs .....	—	—	—	—	—	—	—	—	156	125	155	156	136	728	7.10	5
175.0	Ovary .....	—	—	—	—	—	—	—	—	134	97	132	125	109	597	5.83	—
175.1	Fallopian tube and broad ligament .....	—	—	—	—	—	—	—	—	2	8	2	6	4	22	0.21	—
176.0	Vulva .....	—	—	—	—	—	—	—	—	15	12	12	18	13	70	0.68	1
176.1	Vagina .....	—	—	—	—	—	—	—	—	4	6	7	6	8	31	0.30	1
176.8-176.9	Other and unspecified parts .....	—	—	—	—	—	—	—	—	—	—	—	—	1	1	0.01	—
Sarcomata**):	Lympho- and reticulosarcoma .....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Other and unspecified sarcoma .....	—	—	—	—	—	—	—	—	1	2	2	1	1	7	0.07	—
177-179	Male genital organs .....	149	196	159	160	150	814	10.20	—	—	—	—	—	—	—	—	—
177	Prostate .....	123	163	128	134	127	675	8.46	1	—	—	—	—	—	—	—	—
178	Testis .....	25	23	15	20	17	100	1.25	4	—	—	—	—	—	—	—	—
179.0	Penis .....	1	9	13	6	4	33	0.42	—	—	—	—	—	—	—	—	—
179.1	Scrotum .....	—	—	1	—	—	1	0.01	—	—	—	—	—	—	—	—	—
179.8-179.9	Other and unspecified parts .....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sarcomata**):	Lympho- and reticulosarcoma .....	—	—	—	—	1	1	0.01	—	—	—	—	—	—	—	—	—
	Other and unspecified sarcoma .....	—	1	2	—	1	4	0.05	—	—	—	—	—	—	—	—	—
180-181	Urinary organs .....	153	173	158	151	180	815	10.21	—	62	72	94	96	85	409	3.99	2
180	Kidney .....	48	56	55	56	56	271	3.40	4	30	32	42	44	41	189	1.84	1
181.0 + papilloma	Bladder, carcinoma and papilloma .....	102	113	101	92	123	531	6.65	1	31	37	50	48	42	208	2.03	1
181.8	Ureter and urethra .....	—	3	1	3	1	8	0.10	—	—	3	1	3	2	9	0.09	—
Sarcomata**):	Lympho- and reticulosarcoma .....	1	—	—	—	—	1	0.01	—	—	—	—	—	—	1	0.01	—
	Other and unspecified sarcoma .....	2	1	1	—	—	4	0.05	—	1	—	—	1	—	2	0.02	—
190-191	Skin .....	115	150	147	146	124	682	8.54	—	124	148	156	152	156	736	7.19	—
190	Melanoma .....	5	8	6	8	11	38	0.48	—	20	17	16	16	22	91	0.89	—
191	Other malignant neoplasms of skin .....	109	139	140	133	111	632	7.92	6	102	127	135	130	128	622	6.07	9
Sarcomata**):	Leiomyoma and reticulosarcoma .....	1	1	—	2	2	6	0.07	—	2	2	4	4	2	11	0.14	—
193.1-193.9	Other parts of skin .....	15	7	6	6	3	36	0.46	3	31	12	31	4	2	98	0.98	—
Sarcomata**):	Lympho- and reticulosarcoma .....	3	—	—	1	1	5	0.06	—	6	—	1	1	1	9	0.09	—
	Other and unspecified sarcoma .....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

191	Sarcomata**:	109	139	140	133	111	632	1	38	0.48	—	20	17	16	16	22	91	0.89	—
	{ Other malignant neoplasms of skin						6	—	7.92	—	6	102	127	135	130	128	422	6.07	9
	Anus	1	1	2	2	2	0.07	—	0.07	—	—	2	2	4	4	2	14	0.14	—
192.1-192.9	Lympho- and reticulosarcoma	15	7	6	6	1	38	0.48	—	—	3	34	12	31	14	14	14	0.14	—
Sarcomata**:	Other parts	—	—	—	—	—	5	0.06	—	—	—	6	—	—	1	1	9	0.09	—
	Lympho- and reticulosarcoma	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Other and unspecified sarcoma	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
192, 194-196	Other sites	17	24	17	17	14	89	1.11	—	—	16	33	29	33	26	137	1.33	—	—
192	Eye	5	7	4	6	3	25	0.31	—	—	1	6	7	4	9	5	31	0.30	2
194	Thyroid	2	6	4	5	3	20	0.25	—	—	—	6	19	14	14	13	66	0.64	3
195.0	Suprarenal gland	1	3	3	4	4	15	0.19	—	—	—	1	1	1	3	3	9	0.09	—
195.2	Thymus	1	1	1	—	—	3	0.04	—	—	—	—	—	—	—	—	—	—	—
196.0	Bones of skull and face	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sarcomata**:(196.2-9)	Bones and joints	8	6	5	2	4	25	0.31	—	—	—	3	4	8	6	4	25	0.24	—
	Lympho- and reticulosarcoma	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Other and unspecified sarcoma	—	1	—	—	—	1	0.01	—	—	—	—	2	—	1	—	3	0.03	—
199	Unspecified sites	15	11	15	6	7	54	0.68	—	—	31	31	27	38	30	157	1.53	—	5
199.1	Head and neck	1	—	1	—	—	2	0.03	—	—	—	—	—	—	—	—	—	—	1
199.2	Thorax and pericardium	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
199.3	Abdomen	13	10	13	6	5	47	0.59	—	—	—	31	24	25	34	26	140	1.36	—
199.4	Pelvis	—	—	—	—	—	—	—	—	—	—	—	2	1	1	1	4	0.04	2
199.9	Other unspecified sites	—	—	—	—	—	—	—	—	—	—	—	2	1	—	1	4	0.04	1
Sarcomata**:	Lympho- and reticulosarcoma	1	1	1	—	—	4	0.05	—	—	—	—	3	—	2	2	7	0.07	—
	Other and unspecified sarcoma	—	—	—	—	—	1	0.01	—	—	—	—	—	1	1	—	2	0.02	—
156 partly, 165, 196, 199.6	Metastases	21	20	16	9	18	84	1.05	—	—	18	26	22	19	19	104	1.02	—	—
197	Connective tissue	12	7	5	5	4	33	0.41	—	—	13	8	7	11	3	42	0.41	—	—
200.0-200.1	Lymph system:	3	1	—	2	—	6	0.08	—	—	2	1	3	—	—	—	6	0.06	—
200.2	Lympho- and reticulosarcoma	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
202	Other and unspecified sarcoma	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
201	Other forms	3	11	8	9	13	44	0.55	—	—	5	13	9	14	11	52	0.51	—	—
203	Lymphogranulomatosis, Hodgkin	12	12	14	12	16	66	0.83	—	—	22	11	9	5	10	57	0.56	—	—
204.0	Multiple myeloma	6	12	7	11	12	48	0.60	—	—	10	9	12	11	7	49	0.48	—	—
204.1	Lymphatic leukemia	14	14	33	23	22	106	1.33	—	—	18	17	19	17	15	86	0.84	—	—
204.2-204.4	Myeloid leukemia	12	15	7	16	19	69	0.86	—	—	14	13	24	13	18	82	0.80	—	—
	Leukemia, other and unspecified	5	11	9	8	3	36	0.45	—	—	3	7	1	9	4	24	0.24	—	—
205	Mycosis fungoides	1	—	2	2	—	5	0.06	—	—	—	—	—	2	—	3	0.03	—	—
All malignant neoplasms																			
1474 1631 1601 1661 1617 7984 100.00 1983 1942 2093 2183 2040 10241 100.00																			

\*) Manual Internat. Statistical Classification. Bull. W.H.O. Suppl. 1., 1948.

\*\*) Sarcomata have been specified according to site for total only — see last column.

\*\*\* Revised figures.

Cases of Malignant Neoplasms in Denmark 1953-57. PROVINCIAL TOWNS.

W. H. O. Code No. <sup>1)</sup>	Site	Men					Women										
		1953 ...	1954	1955	1956	1957	Total 1953-1957	% of all mal. neopl.	Sarco- mata 1953-1957	1953 ...	1954	1955	1956	1957	Total 1953-1957	% of all mal. neopl.	Sarco- mata 1953-1957
140-145, 147-148	Buccal cavity and pharynx .....	57	57	43	50	54	261	3.43	—	19	14	24	14	28	99	1.10	—
140	Lip .....	28	27	28	27	34	144	1.89	—	3	2	5	3	5	18	0.20	—
141	Tongue .....	5	8	4	5	5	27	0.36	—	4	2	5	3	2	16	0.18	—
142	Salivary gland .....	7	3	1	5	6	22	0.29	1	5	4	4	4	3	23	0.25	—
143-144	Mouth .....	9	6	6	7	7	35	0.46	—	—	3	4	1	9	17	0.19	2
145.0	Tonsil (throat) .....	2	2	—	2	1	7	0.09	10	1	—	1	1	1	4	0.05	7
145.8, 145.9, 147, 148	Pharynx, hypopharynx and unspec.	3	6	3	—	1	13	0.17	2	4	1	2	2	2	11	0.12	1
Sarcomata**):	Lympho- and reticulosarcoma	3	3	1	3	—	10	0.13	—	2	2	3	1	1	9	0.10	—
	Other and unspecified sarcoma	—	2	—	1	—	3	0.04	—	—	—	—	—	1	1	0.01	—
150-159	Digestive organs and peritoneum .....	614	566	603	629	614	3026	39.73	—	500	495	488	569	516	2568	28.52	—
150	Oesophagus .....	40	23	30	24	28	145	1.91	1	15	20	10	12	10	67	0.75	—
151	Stomach .....	248	224	247	245	241	1205	15.82	10	184	182	176	196	173	911	10.12	3
152.0	Duodenum .....	—	3	1	—	—	4	0.09	1	1	—	1	1	1	4	0.04	—
152.8-152.9	Small intestine .....	—	4	4	3	2	13	0.17	4	—	3	4	2	4	13	0.14	2
153.0-153.2, 153.9	Colon .....	77	62	73	56	73	341	4.48	1	94	73	86	86	103	442	4.91	—
153.3	Sigmoid colon .....	38	44	40	51	43	216	2.84	—	23	35	48	66	42	214	2.38	—
153.8	Intestinal tract, part unspecified	7	5	5	1	5	23	0.30	1	7	6	5	8	6	32	0.36	—
154	Rectum .....	126	122	117	154	130	649	8.52	3	87	90	83	95	80	435	4.83	1
155.0	Liver (primary) .....	—	2	4	3	1	10	0.13	1	4	3	3	2	3	15	0.17	2
155.1	Biliary passages .....	7	2	8	8	8	33	0.43	—	22	15	20	23	23	103	1.14	—
156 partly	{ Ampulla of Vater .....	2	1	3	3	4	13	0.17	—	3	2	1	4	1	11	0.12	—
157	Liver (not stated as primary) .....	17	23	22	19	16	97	1.27	—	24	19	15	24	20	102	1.13	—
158	Pancreas .....	37	40	42	46	44	209	2.75	1	27	36	28	37	33	161	1.79	—
159	Peritoneum .....	3	4	3	3	3	14	0.18	3	5	9	5	10	9	38	0.42	2
Sarcomata**):	Unspecified digestive organs	3	—	—	3	3	9	0.12	16	1	1	—	1	—	3	0.03	7
	Lympho- and reticulosarcoma	7	3	2	6	7	25	0.33	—	1	—	2	1	4	8	0.09	—
	Other and unspecified sarcoma	3	4	2	3	5	17	0.22	—	2	1	1	1	4	9	0.10	—
160-164, 146	Respiratory system .....	148	180	187	214	226	955	12.54	—	42	36	36	52	58	224	2.49	—
146, 160.0-160.1, 160.9	Nasal cavities .....	2	5	3	4	7	21	0.27	9	3	—	3	2	3	11	0.12	11
160.2, 196.1	Maxillary sinus and jawbone	1	2	6	3	3	15	0.20	1	1	3	1	2	2	9	0.10	1
161-162.0	Larynx and trachea .....	11	19	15	25	16	86	1.13	1	1	1	1	3	2	8	0.09	1
162.1	Lung (primary) .....	83	82	78	113	122	478	6.28	—	13	12	9	9	24	67	0.75	—
162.2	Pleura .....	—	3	4	1	3	11	0.14	7	3	2	1	4	1	11	0.12	3
163	Lung (not stated as primary) .....	40	48	61	52	58	259	3.40	3	14	10	13	20	17	74	0.82	1
164	Mediastinum .....	1	3	4	2	2	12	0.06	6	2	3	—	2	—	7	0.06	1
Sarcomata**):	Lympho- and reticulosarcoma	1	—	—	—	—	1	0.01	—	2	—	—	3	1	6	0.01	—
	Other and unspecified sarcoma	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
171-174	Uterus .....	—	—	—	—	—	—	—	—	326	313	360	378	359	1736	19.29	—



163	Lung (not stated as primary) . . . . .	40	48	61	52	53	55	3	11	0.14	7	3	2	1	4	1	11	0.12	3
164	Mediastinum . . . . .	1	3	3	2	2	2	2	2	0.40	3	14	10	13	20	17	74	0.82	1
165	Lympho- and reticulosarcoma . . . . .	1	3	12	3	2	2	2	2	0.40	6	2	2	2	2	2	2	0.06	4
Sarcomata**):	Other and unspecified sarcoma . . . . .	1	—	—	—	—	—	—	—	1	0.01	2	3	—	3	1	9	0.10	—
171—174	Uterus . . . . .	—	—	—	—	—	—	—	—	—	—	326	313	360	378	359	1736	19.29	—
171	Cervix . . . . .	—	—	—	—	—	—	—	—	—	—	231	221	246	262	248	1208	13.42	31
172	Corpus . . . . .	—	—	—	—	—	—	—	—	—	—	74	69	89	92	86	410	4.56	—
173	Choriocarcinoma, etc. . . . .	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	1	3	0.03
174	Unspecified . . . . .	—	—	—	—	—	—	—	—	—	—	11	18	20	18	16	83	0.92	1
Sarcomata**):	Lympho- and reticulosarcoma . . . . .	—	—	—	—	—	—	—	—	—	—	8	5	5	6	8	32	0.36	—
Other and unspecified sarcoma . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
175—176	Other female genital organs . . . . .	—	—	—	—	—	—	—	—	—	—	118	115	122	135	113	603	6.70	—
175.0	Ovary . . . . .	—	—	—	—	—	—	—	—	—	—	99	100	94	104	93	490	5.44	8
175.1	Fallopian tube and broad ligament . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	3	1	5	0.06	—
176.0	Vulva . . . . .	—	—	—	—	—	—	—	—	—	—	14	5	14	16	13	62	0.69	—
176.1	Vagina . . . . .	—	—	—	—	—	—	—	—	—	—	5	10	10	9	3	37	0.41	—
176.8—176.9	Other and unspecified parts . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	0.01	—
Sarcomata**):	Lympho- and reticulosarcoma . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other and unspecified sarcoma . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	3	3	2	8	0.09	—
177—179	Male genital organs . . . . .	163	188	183	162	188	884	11.61	—	—	—	—	—	—	—	—	1	1	0.01
177	Prostate . . . . .	124	149	143	139	150	699	9.18	—	—	—	—	—	—	—	—	1	1	0.01
178	Testis . . . . .	25	26	23	25	27	126	1.66	3	—	—	—	—	—	—	—	—	—	—
179.0	Penis . . . . .	13	12	16	4	10	55	0.72	—	—	—	—	—	—	—	—	—	—	—
179.1	Scrotum . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
179.8—179.9	Other and unspecified parts . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sarcomata**):	Lympho- and reticulosarcoma . . . . .	—	1	—	—	1	1	0.01	—	—	—	—	—	—	—	—	—	—	—
Other and unspecified sarcoma . . . . .	—	1	—	1	—	—	2	0.03	—	—	—	—	—	—	—	—	—	—	—
180—181	Urinary organs . . . . .	90	100	92	107	143	532	6.98	—	—	—	50	72	48	54	70	294	3.27	—
180	Kidney . . . . .	24	27	25	31	61	168	2.20	2	—	—	21	45	21	27	36	150	1.67	3
181.0 + papilloma	Bladder, carcinoma and papilloma . . . . .	66	73	67	75	80	361	4.74	—	—	—	27	26	25	26	31	135	1.50	1
181.8	Ureter and urethra . . . . .	—	—	—	—	1	1	0.01	—	—	—	1	1	1	1	1	5	0.06	—
Sarcomata**):	Lympho- and reticulosarcoma . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other and unspecified sarcoma . . . . .	—	—	—	—	1	1	2	0.03	—	—	—	1	—	1	—	1	1	0.01	—
190—191	Skin . . . . .	169	154	185	178	176	862	11.32	—	—	—	130	120	138	138	119	645	7.16	—
190	Melanoma . . . . .	14	11	8	12	11	56	0.74	—	—	—	19	10	18	13	13	73	0.81	—
191	Other malignant neoplasms of skin . . . . .	151	138	174	161	162	786	10.32	15	—	—	106	108	113	122	101	550	6.11	15
Sarcomata**):	Anus . . . . .	1	3	—	1	1	5	0.06	—	—	—	3	—	1	1	2	7	0.08	—
Other and unspecified sarcoma . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other and unspecified sarcoma . . . . .	—	3	2	2	3	3	13	0.17	—	—	—	2	2	5	1	3	13	0.14	—

(Cont.)

\*) Manual Internat. Statistical Classification. Bull. W. H. O. Suppl. 1., 1948.

\*\*) Sarcomata have been specified according to site for total only — see last column.

\*\*\*, Revised figures.

Cases of Malignant Neoplasms in Denmark 1953-57, PROVINCIAL TOWNS.

W. H. O. Code No. 7)	Site	Men					Women										
		1953 (...)	1954	1955	1956	1957	Total 1953- 1957	% of all mal. neopl.	Sarcoma 1953- 1957	1953 (...)	1954	1955	1956	1957	Total 1953- 1957	% of all mal. neopl.	Sarcoma 1953- 1957
193	Brain and nervous system	43	34	37	43	51	208	2.73		31	27	41	48	44	191	2.12	
193.0	Brain	35	25	32	35	38	165	2.17	1	21	14	25	30	26	116	1.29	4
193.1-193.9	Other parts	6	8	5	5	11	35	0.46	7	8	11	15	14	17	65	0.72	6
Sarcomata**):	Lympho- and reticulosarcoma		1				1	0.01									
	Other and unspecified sarcoma	2			3	2	7	0.09		2	2	1	4	1	10	0.11	
192, 194-196	Other sites	12	12	14	26	18	82	1.08		19	20	27	23	28	117	1.30	
192	Eye	5	4	6	9	6	30	0.39		6	7	6	8	5	32	0.36	3
194	Thyroid	4	4	1	5	4	18	0.24		7	9	10	9	14	49	0.54	1
195.0	Suprarenal gland				3		3	0.04		1			2	1	4	0.05	
195.2	Thymus			1	1		2	0.03		1		1			2	0.02	
196.0	Bones of skull and face																
Sarcomata**): (196.2-9)	Bones and joints	3	4	6	8	8	29	0.38		2	4	10	3	7	26	0.29	
	Lympho- and reticulosarcoma									1				1	2	0.02	
	Other and unspecified sarcoma									1			1		2	0.02	
199	Unspecified sites	23	27	22	25	18	115	1.51		40	52	46	35	52	225	2.50	
199.1	Head and neck	1	2	2	1		6	0.08	6				1	1	2	0.02	4
199.2	Thorax and pericardium			1			1	0.01	2			1			1	0.01	3
199.3	Abdomen	21	23	17	21	15	97	1.27		39	48	43	33	48	211	2.35	
199.4	Pelvis									1	3				4	0.05	
199.9	Other unspecified sites			1	1		2	0.03	1								
Sarcomata**):	Lympho- and reticulosarcoma	1	2	1	1	3	8	0.11			1	1		1	3	0.03	
	Other and unspecified sarcoma				1		1	0.01				1	1	2	4	0.04	
156 partly, 165, 198, 199.6 Metastases		25	14	32	17	17	105	1.38		25	24	24	20	29	122	1.36	
197	Connective tissue	10	10	11	7	5	43	0.56		24	11	8	6	7	56	0.62	
200.0-200.1	Lymph system:	3	3	1			7	0.09		2		1	1	1	5	0.06	
200.2	Lympho- and reticulosarcoma	4			3		7	0.09		3					3	0.03	
202	Other and unspecified sarcoma																
201	Other forms	4	16	22	16	17	75	0.98		4	10	11	9	7	41	0.46	
203	Lymphogranulomatosis, Hodgkin	11	19	15	16	16	77	1.01		9	13	9	11	9	51	0.57	
204.0	Multiple myeloma	10	13	11	21	19	74	0.97		9	14	9	15	15	62	0.69	
204.1	Lymphatic leukemia	36	26	27	37	34	160	2.10		12	11	18	25	14	80	0.89	
204.2-204.4	Myceloid leukemia	13	15	17	11	23	79	1.04		25	10	16	13	19	83	0.92	
205	Leukemia, other and unspecified	9	2	9	9	10	39	0.51		6	8	4	9	5	32	0.36	
	Mucocals fungoides	3		1	2		6	0.08		1	1		1	1	4	0.04	
140-145, 147-148	Recent cavity and pharynx	57	56	62	116	136	568	4.78		13	18	16	16	16	146	4.84	
140	Lip	73	80	72	90	101	416	3.62		3	3	8	6	4	24	0.20	
141	Tongue	4	8	8	2		23	0.20		3	5	6	6	1	21	0.18	
142	Salivary gland	7	8	10	8	15	48	0.42	3	9	15	11	6	6	57	0.49	2
143-144	Mouth	4	4	7	4	6	25	0.22		2	5		3	3	13	0.11	3

	204.2-204.3	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
Leukemia, other and unspecified	3	2	1	9	10	39	0.51	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—																																																																																																																																																																																																															

\* Manual Internat. Statistical Classification. Bull. W.H.O. Suppl. 1, 1948.

##) Sarcomata have been specified according to site for total only — see last column.

### Revised figures.





192, 194—196	Other sites	23	30	29	39	151	1.31	23	31	35	41	38	168	1.43
192	Eye	5	9	15	12	11	52	6	7	1	6	8	10	32
194	Thyroid	8	4	3	4	11	30.26	1	10	19	15	16	79	0.67
195.0	Suprarenal gland	—	3	—	2	4	9	0.08	—	3	2	2	2	10
195.2	Thymus	—	1	—	—	2	3	0.03	—	—	3	1	4	0.09
196.0	Bones of skull and face	—	—	1	—	1	0.01	—	—	1	—	—	1	0.01
Sarcomata**):(196.2-9)	Bones and joints	10	10	11	8	10	49	0.42	—	5	5	9	32	0.27
—	Lympho- and reticulosarcoma	—	—	—	—	—	—	—	—	1	2	—	3	0.03
—	Other and unspecified sarcoma	—	3	1	2	1	7	0.06	1	3	1	2	7	0.06
199	Unspecified sites	31	32	37	35	37	172	1.50	66	65	70	54	62	317
199.1	Head and neck	—	2	2	3	1	8	0.07	5	—	—	—	1	2
199.2	Thorax and pericardium	—	1	—	—	—	1	0.01	3	—	—	—	—	0.02
199.3	Abdomen	26	25	33	28	34	146	1.27	60	62	68	52	55	297
199.4	Pelvis	—	1	1	—	—	2	0.02	7	—	1	1	3	6
199.9	Other unspecified sites	—	—	—	—	—	—	—	—	—	1	—	1	3
Sarcomata**):	Lympho- and reticulosarcoma	1	1	—	2	1	5	0.04	1	—	—	—	2	3
—	Other and unspecified sarcoma	4	2	1	2	1	10	0.09	2	2	—	1	—	5
156 partly, 165, 198, 199.6	Metastases	43	27	20	36	29	155	1.35	46	31	37	29	47	190
197	Connective tissue	17	16	16	13	14	76	0.66	14	21	9	8	11	63
200.0—200.1	Lymph system:	4	6	3	1	5	19	0.17	4	4	4	1	1	14
200.2	Lympho- and reticulosarcoma	2	4	2	1	4	13	0.11	2	3	1	—	—	6
202	Other and unspecified sarcoma	6	15	16	21	36	94	0.82	6	14	16	13	12	61
201	Other forms	44	17	29	27	34	151	1.31	16	12	24	16	17	85
203	Lymphogranulomatosis, Hodgkin	17	30	24	31	26	128	1.11	13	17	14	22	19	85
204.0	Multiple myeloma	40	46	70	63	56	275	2.39	20	21	20	13	25	99
204.1	Lymphatic leukemia	25	29	24	30	20	128	1.11	20	29	33	31	27	140
204.2—204.4	Myeloid leukemia	16	19	8	20	19	82	0.71	13	7	3	9	6	38
205	Leukemia, other and unspecified	3	3	2	2	—	10	0.09	—	1	1	2	3	7
—	Mycosis fungoides	—	—	—	—	—	—	—	—	—	—	—	—	0.06
All malignant neoplasms		2190	2179	2295	2391	2440	11495	100.00	2327	2291	2379	9379	2383	11759
														100.00

\*) Manual Internat. Statistical Classification. Bull. W. H. O. Suppl. 1., 1948.

\*\*) Sarcomata have been specified according to site for total only — see last column.

\*\*\* Revised figures.

Cases of Malignant Neoplasms in Denmark 1953—57. COPENHAGEN SUBURBS.

W. H. O. Code No. <sup>a)</sup>	Site	Men					Women										
		1953 ...	1954	1955	1956	1957	Total 1953- 1957	% of all mal. neopl.	Sarco- mata 1953- 1957	1953 ...	1954	1955	1956	1957	Total 1953- 1957	% of all mal. neopl.	Sarco- mata 1953- 1957
140—145, 147—148	Buccal cavity and pharynx	6	9	11	10	17	53	3.82	—	9	2	8	6	3	28	1.75	—
140	Lip	5	5	1	4	5	20	1.44	—	1	—	1	2	1	5	0.31	—
141	Tongue	—	2	4	1	3	10	0.72	—	1	—	2	—	—	3	0.19	—
142	Salivary gland	1	—	3	1	4	9	0.64	—	6	—	4	4	2	16	1.00	—
143—144	Mouth	—	1	1	—	3	5	0.36	—	1	—	1	—	—	2	0.13	—
145.0	Tonsil (throat)	—	—	2	1	1	3	0.22	3	—	1	—	—	—	1	0.06	—
145.8, 145.9, 147, 148	Pharynx, hypopharynx and unsp.	—	1	—	1	1	3	0.22	—	—	1	—	—	—	1	0.06	—
Sarcomata**):	Lympho- and reticulosarcoma	—	—	—	2	1	3	0.22	—	—	—	—	—	—	—	—	—
—	Other and unspecified sarcoma	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
150—159	Digestive organs and peritoneum	96	92	98	70	77	433	31.21	—	77	68	77	89	84	395	24.73	1
150	Oesophagus	6	10	4	3	4	27	1.95	—	3	—	3	1	—	7	0.44	—
151	Stomach	26	30	38	27	27	148	10.67	2	23	19	21	34	23	120	7.51	—
152.0	Duodenum	—	—	—	1	—	1	0.07	1	—	—	—	1	—	1	0.06	—
152.8—152.9	Small intestine	—	—	1	—	—	1	0.07	—	—	—	—	4	1	5	0.31	—
153.0—153.2, 153.9	Colon	16	12	10	4	8	50	3.61	—	11	15	13	15	7	61	3.82	—
153.3	Sigmoid colon	13	8	10	13	9	53	3.82	—	10	6	13	5	14	48	3.01	—
153.8	Intestinal tract, part unspecified	—	2	—	—	—	2	0.14	—	3	3	1	1	—	5	0.31	—
154	Rectum	23	19	15	13	14	84	6.06	—	15	16	13	11	20	75	4.70	—
155.0	Liver (primary)	—	—	—	1	1	2	0.14	—	—	—	—	1	—	1	0.06	—
155.1	Biliary passages	2	—	1	1	2	6	0.43	—	3	2	3	4	6	18	1.13	—
156 partly	Ampulla of Vater	—	1	—	1	2	4	0.29	—	—	—	1	2	—	3	0.19	—
157	Liver (not stated as primary)	—	1	3	1	2	6	0.43	—	3	1	3	3	4	14	0.88	—
158	Pancreas	9	10	8	5	7	39	2.81	—	6	4	4	5	8	27	1.69	—
159	Peritoneum	—	—	1	—	—	1	0.07	—	2	1	2	1	—	6	0.37	—
Sarcomata**):	Unspecified digestive organs	1	—	2	—	—	3	0.22	3	—	—	—	—	—	—	—	2
—	Lympho- and reticulosarcoma	—	1	3	1	1	6	0.43	—	1	1	—	1	1	4	0.25	—
—	Other and unspecified sarcoma	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
160—164, 146	Respiratory system	41	53	45	64	57	260	18.75	—	8	12	16	12	12	60	3.76	1
146, 160.0—160.1, 160.9	Nasal cavities	1	1	1	1	1	5	0.36	1	1	—	—	—	—	1	0.06	—
160.2, 196.1	Maxillary sinus and jawbone	1	—	5	—	—	6	0.43	1	—	1	—	—	—	1	0.06	—
161—162.0	Larynx and trachea	2	3	3	10	2	20	1.44	—	1	1	1	4	1	8	0.50	—
162.1	Lung (primary)	28	36	24	29	38	155	11.18	—	3	6	6	3	6	24	1.51	—
162.2	Pleura	—	3	—	—	—	3	0.22	1	2	—	2	—	2	6	0.38	1
163	Lung (not stated as primary)	6	9	9	20	12	56	4.04	—	1	3	4	5	—	13	0.81	—
164	Mediastinum	1	—	—	1	1	3	0.22	1	—	—	—	—	—	—	—	—
Sarcomata**):	Lympho- and reticulosarcoma	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	Other and unspecified sarcoma	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
171—174	Uterus	—	—	—	—	—	—	—	—	55	61	69	76	96	357	22.36	—
—	—	—	—	—	—	—	—	—	—	42	45	46	62	68	264	16.53	—

163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329	13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Cases of Malignant Neoplasms in Denmark 1953-57. COPENHAGEN SUBURBS.

W. H. O. Code No. *)	Site	Men					Women										
		1953 (**)	1954	1955	1956	1957	Total 1953- 1957	% of all mal. neopl.	Sarco- mata 1953- 1957	1953 (**)	1954	1955	1956	1957	Total 1953- 1957	% of all mal. neopl.	Sarco- mata 1953- 1957
193	Brain and nervous system	7	16	19	15	17	74	5.34	—	6	11	6	14	13	50	3.13	—
193.0	Brain	7	13	13	12	15	60	4.33	—	4	9	6	12	9	40	2.51	—
193.1—193.9	Other parts	—	3	6	3	2	14	1.01	—	1	2	—	2	4	9	0.56	1
Sarcomata**):	Lympho- and reticulosarcoma	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Other and unspecified sarcoma	—	—	—	—	—	—	—	—	1	—	—	—	—	1	0.06	—
192, 194—196	Other sites	3	2	6	1	2	14	1.01	—	3	—	6	4	6	19	1.19	—
192	Eye	—	2	2	—	—	4	0.29	—	—	—	—	2	1	3	0.19	—
194	Thyroid	—	—	2	—	—	2	0.14	—	2	—	—	—	3	10	0.62	2
195.0	Suprarenal gland	1	—	—	—	—	1	0.07	—	—	—	—	—	1	1	0.06	—
195.2	Thymus	1	—	—	—	—	1	0.07	—	—	—	—	1	—	1	0.06	—
196.0	Bones of skull and face	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sarcomata**): (196.2-4)	Bones and joints	1	—	2	1	2	6	0.44	—	1	—	—	1	—	2	0.13	—
	Lympho- and reticulosarcoma	—	—	—	—	—	—	—	—	—	—	1	—	1	2	0.13	—
	Other and unspecified sarcoma	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
199	Unspecified sites	5	3	6	2	3	19	1.37	—	7	5	7	5	3	27	1.69	—
199.1	Head and neck	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
199.2	Thorax and pericardium	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—
199.3	Abdomen	5	2	6	2	2	17	1.23	—	6	4	7	5	3	25	1.57	—
199.4	Pelvis	—	—	—	—	—	—	—	—	—	1	—	—	—	1	0.06	1
199.9	Other unspecified sites	—	—	—	—	1	1	0.07	—	—	—	—	—	—	—	—	—
Sarcomata**):	Lympho- and reticulosarcoma	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Other and unspecified sarcoma	—	1	—	—	—	1	0.07	—	1	—	—	—	—	1	0.06	—
156 partly, 165, 198, 199.6	Metastases	6	3	2	4	1	16	1.15	—	7	2	5	3	4	21	1.31	—
197	Connective tissue	—	1	3	1	—	5	0.36	—	4	—	—	—	1	5	0.31	—
200.0—200.1	Lymph system:	—	—	—	—	—	—	—	—	—	—	—	—	1	1	0.06	—
200.2	Lympho- and reticulosarcoma	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
202	Other and unspecified sarcoma	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
202	Other forms	1	1	4	3	6	15	1.08	—	—	1	—	2	3	6	0.38	—
201	Lymphogranulomatosis, Hodgkin	1	2	3	4	2	12	0.87	—	5	4	4	4	1	15	0.94	—
203	Multiple myeloma	1	2	1	—	1	5	0.36	—	1	1	2	1	2	7	0.44	—
204.0	Lymphatic leukemia	5	5	4	5	3	22	1.59	—	1	2	—	1	3	7	0.44	—
204.1	Myeloid leukemia	4	6	5	12	6	33	2.38	—	—	6	4	10	4	24	1.50	—
204.2—204.4	Leukemia, other and unspecified	3	2	2	2	1	8	0.58	—	—	3	—	2	1	6	0.38	—
205	Mycosis fungoides	1	—	1	—	—	2	0.14	—	—	—	—	—	—	—	—	—
All malignant neoplasms		250	281	277	286	293	1387	100.00	—	283	293	322	342	357	1597	100.00	—

\*) Manual Internat. Statistical Classification. Bull. W. H. O. Suppl. 1., 1948.

\*\*) Sarcomata have been specified according to site for total only — see last column.

\*\*\*) Revised figures.



